

TEACHERS' PERCEIVED CHANGES IN PRACTICES AND  
STUDENTS' LEARNING AS A RESULT OF IMPLEMENTING TEACHER ACTION  
RESEARCH

A Dissertation  
Presented to  
the School of Education  
Drake University

In Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Education

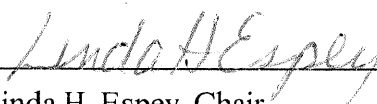
by Laura Lynnette Sivadge  
September 2005

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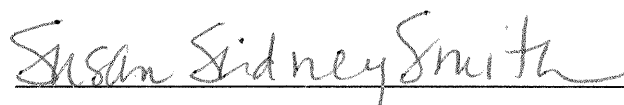
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# TEACHERS' PERCEIVED CHANGES IN PRACTICES AND STUDENTS' LEARNING AS A RESULT OF IMPLEMENTING TEACHER ACTION RESEARCH

An abstract of a Dissertation by  
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September 2005  
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**The problem:** Teachers are making data-driven decisions that impact their teaching practices and students learning. Teachers are searching for a practice that allows them to be proactive in simultaneously addressing the differentiated needs of their students. Action research is that practice. Guidance is needed in the design and implementation of an action research professional development program to support the multiple needs of teachers and their students.

**Methodology:** An observational case study was the research design used to collect data on the implementation of the professional development program, teacher action research, and its impact on teachers and students. Focused interviews using the instrument, Measuring Levels of Use of the Innovation, revealed changes in teaching practices and student learning and also provided data on what a facilitator of an action research professional development might anticipate during implementation.

**Findings:** Research outcomes found teachers' perceived changes in their behaviors. They described themselves as deliberate practitioners, informed consumers of research, and improved communicators. Teachers perceived changes in their students' learning as goal-directed and improved as a result of action research practices. Findings clearly demonstrated the research-based factors that support the design and implementation of an action research plan: (a) action researcher practices; (b) teamwork, goal-setting, and data analysis; (c) the resource of time; and (d) support of administrators and colleagues.

**Conclusions:** Findings from this study suggest teachers do perceive positive changes in their practices and student learning as a result of their participation in an action research professional development program. Communications, improved learning, collaboration, time, and administrative support contribute to the implementation of action research.

**Recommendations:** Additional studies, employing both quantitative and qualitative research methods in multiple educational settings may lend further credence to better understanding the teacher action researcher and the professional development support needed. Further research may also focus on students' achievement as a result of their participation in a teacher's action research project.

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## CHAPTER 1

### STATEMENT OF PROBLEM

If ever there were a time and a strategy that were right for each other, the time is now and that strategy is action research. Educators are being asked to simultaneously professionalize teaching, enhance their motivation and effectiveness, meet the needs of an increasingly diverse student body, and achieve success with standards-based reforms (Sagor, 2000). The wisdom that informs the practice to simultaneously address these four areas comes from those doing the work, the classroom teachers.

Sagor (2000) defines action research as “a disciplined process of inquiry conducted *by* and *for* those taking the action. The primary reason for engaging in action research is to assist the ‘actor’ in improving and/or regaining his or her actions” (Sagor, 2000, p. 3). There are several action research designs but all contain the following basic elements: (a) determine a focus, (b) collect data, (c) analyze and interpret the data, and (d) take action. See Figure 1 for Sagor’s (2000) expanded action research design.

Calhoun (1994), Glanz (1998), Schmoker (1999), and Sagor (2000) have conducted numerous studies on the application of action research in an educational setting. Although each has designed models using different words, they each include using data to act or react to a defined problem or area of concern.

Teachers practicing action research are engaged in collegial discussions focused on classroom issues that tend to produce wiser professional decisions. Classroom

Figure 1. Action research cycle

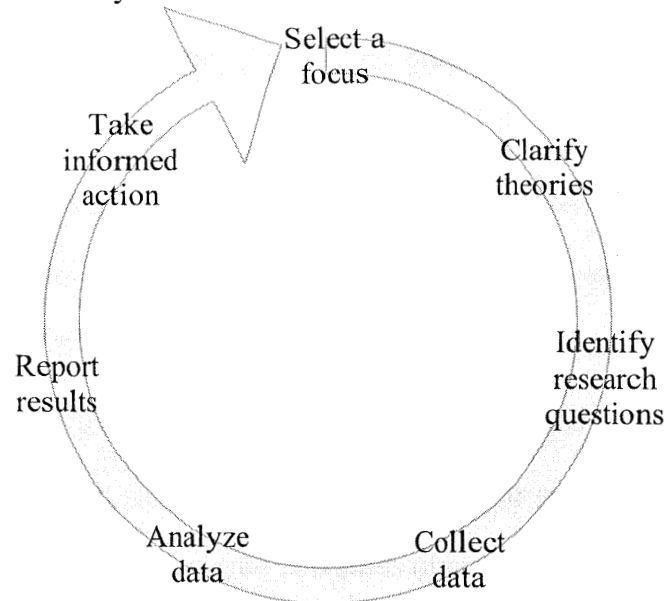


Figure 1. Action research cycle. Cyclical nature of action research. Professional development focused on action research is evident in the content, process, and context of a professional development plan. From *Guiding Improvement with Action Research*, by Richard Sagor. Copyright 2000 by the Association for Supervision and Curriculum Development.

teachers must have a strong content background in each of the subjects they teach, understand the range of students' differences in the classroom, and diagnose and prescribe appropriate instructional modifications based upon an understanding of each child's uniqueness. The classroom is the venue that allows teachers to craft and apply action research-developed solutions to these ever changing classroom issues.

Today's teachers are being asked to do more with less. Parental and societal expectations are increasing, students are bringing more personal problems into the classroom, and budgets are being cut (Sagor, 2000). In the midst of these multifaceted challenges, action research provides teachers the credible evidence that their teaching is making a difference. Much like physical fitness enthusiasts who record and analyze data on improved physical development, teachers practicing action research integrate the use

of data in their daily work and find their hard work is paying off. The teachers, schools, and school systems that seize this opportunity and invest in the power of inquiry will find teaching a meaningful and rewarding professional practice. The time is right for action research (Sagor, 2000).

This study details a roadmap for a school or school system planning an action research professional development program. Effective leaders know that change is a process, not an event. They wisely anticipate an *implementation dip*, a dip in performance and confidence as one encounters an innovation that requires new skills and new understandings (Fullan, 2001). During the implementation of a new innovation like action research, teachers will experience two kinds of problems during the dip – the social-psychological fear of change, and the lack of technical know-how or skills to make the change work. All successful schools experience implementation dips during the change process of school improvement. Schools' leaders must be sensitive to teachers' implementation needs (Fullan, 2001).

This study also provides advice to leaders in the design of an action research professional development program. In addition, this study serves as a research-based resource for educational leaders that not only shares the various levels of use one can anticipate from this innovation implementation, but also provides interventions that teachers and their leaders have found supportive of their action research efforts.

### *Blending Legislative Pressures with Guidance to Produce Change*

Americans focused on the intent of recent federal and state legislation detect a common message threaded throughout the laws. That message speaks clearly of the standardization of practices and increased accountability expectations of educators to



provide equitable learning opportunities for all students. The federal legislation, No Child Left Behind (NCLB) Act of 2001 (U.S. Department of Education, 2002), requires states to outline a plan that demonstrates, in an incremental growth pattern, all students achieving academic proficiencies in reading and mathematics in 2013-14 as measured by a statewide standardized assessment.

In the summer of 2001, the National Staff Development Council (NSDC) published revised standards for staff development that placed improved student learning at the core of quality professional development programs (NSDC, 2001). About the same time, the Iowa legislature passed the Student Achievement and Teacher Quality Act (Iowa Code, § 476, 2001) that included the expectation that a school district's professional development program focus on students' learning needs.

The focus on student learning does not stop with those two legislations. The Iowa Administrative Code Chapter 12 (Iowa Code, § 281-12.8(1), 1999) cites the expectation of all districts to develop a Comprehensive School Improvement Plan (CSIP). In addition, each district "shall incorporate into its CSIP provisions for the professional development of all staff . . . and shall emphasize the research-based practices to achieve increased student achievement, learning, and performance as stated in the CSIP" (Iowa Code, 281-12.7(1), 1999).

Guidance in achieving the intent of these three laws is provided at both the national and state levels. These legislative requirements reflect the stated purpose of the revised NSDC's Professional Development Standards --"increased student achievement" (Council, 2001) -- that align with the principles on which the Iowa Teacher Quality Program ("Student Achievement & Teacher Quality," 2001, Iowa Code, § 476, 2001) is

based. The Iowa Affiliate of the National Staff Development Council developed a comparison (see Table 1) between the NSDC Standards and the Iowa Teacher Quality Program Standards (Showers & Group, 2002).

Table 1

*Alignment of National Professional Development Standards with  
Iowa's Teacher Quality Program (ITQP) Principles*

Standards descriptors	NSDC	Iowa Teacher Quality
Emphasize <u>quality</u> professional development	✓	✓
Target increased student achievement	✓	✓
Focus on research-based practice	✓	✓
Place a priority on instructional strategies	✓	✓
Stress collaboration (e.g., the ITQP emphasizes the collective work on district goals)	✓	✓
Emphasize continuous improvement (e.g., the ITQP links professional development to evaluation and career paths)	✓	✓
Are data driven (e.g., the ITQP is driven by the CSIP and the data that establishes priorities)	✓	✓
Call for equity and meeting the needs of all students	✓	✓
Emphasize evaluation	✓	✓

*Note:* Information is taken from *The Iowa Professional Development Model* by the Iowa Teacher Quality Program Professional Development Stakeholder Group with Beverly Showers, consultant, 2002, p. 45.

The content, context, and processes of an exemplary teacher action research professional development program address the NSDC Standards (Council, 2001) and complement (see Table 2) the three critical elements that contribute to successful implementation of an action research professional development program (Schmoker, 2001a): (a) meaningful, informed teamwork; (b) clear, measurable goals; and (c) the regular collection and analysis of performance data.

A constant search for a better way to instruct characterizes a teacher action research program. The interrelatedness of these three critical elements is reflected in the evolutionary work of teacher teams. These collaborative teams of teachers establish achievement goals and regularly collect classroom assessment data to determine if their teaching practices are contributing to improved student achievement. Writing specific, measurable goals is one of the most promising teaching practices. Collaborative teams positively impact their students' learning using a systematic collection and analyses of student performance data to inform their classroom practices.

#### *Action Research and the Iowa Professional Development Model*

The Iowa Professional Development Model (IPDM) (Showers & Group, 2002) focuses on improving student learning and engages all educators in collective professional development. Student achievement is positively affected through professional development that involves teachers and administrators in the collective study of student data, goal setting, determination of content, design of the training, and formative and summative evaluations of a program.

Table 2

*Components of a Successful Results-Driven Action Research Program*

National Staff Development Standards		Results-driven action research components		
CONTEXT	<i>Staff development that improves the learning of all students...</i>	Teamwork	Measurable Goals	Performance data
	1. Organizes adults into learning communities whose goals are aligned with those of the school and district.	✓	✓	
	2. Requires skillful school and district leaders who guide continuous instructional improvement.	✓	✓	✓
	3. Requires resources to support adult learning and collaboration.	✓		
PROCESS	4. Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.		✓	✓
	5. Uses multiple sources of information to guide improvement and demonstrate its impact.		✓	✓
	6. Prepares educators to apply research to decision making.		✓	✓
	7. Uses learning strategies appropriate to the intended goal.		✓	
	8. Applies knowledge about human learning and change.	✓	✓	✓
	9. Provides educators with the knowledge and skills to collaborate.	✓		

Table 2 (continued)

	National Staff Development Standards	Results-driven action research components		
		Teamwork	Measurable Goals	Performance data
CONTENT	<i>Staff development that improves the learning of all students...</i>			
	10. Prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.		✓	✓
	11. Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.		✓	✓
	12. Provides educators with knowledge and skills to involve families and other stakeholders appropriately.	✓		✓

*Note:* Information is taken from *The Iowa Professional Development Model* by the Iowa Teacher Quality Program Professional Development Stakeholder Group with Beverly Showers, consultant, 2002, pp. 43-44.

The IPDM serves as a research based prototype Iowa school systems can reference in the development of their district professional development programs. The purpose of the IPDM is to provide a structure for professional development that is focused, collaborative, and directly supportive of the comprehensive school improvement goals for student achievement.

Four operating principles guide the Iowa Professional Development Model:

1. Focus on curriculum, instruction, and assessment;
2. Participative decision-making;
3. Simultaneity; and
4. Leadership

Focus on curriculum requires that the district and building staff improve their skills in implementing instructional practices that are likely to make a difference for their students. These practices should have a scientific research base that is more likely to result in improved student learning and is also aligned with district standards and assessments.

Participative decision-making means decisions are made together with group members. For effective systemic professional development to meet the goal of improved student achievement, the group must agree on certain terms and conditions under which they will operate.

Simultaneity addresses the fact that we perform the following three actions at the same time: (a) look at what we teach, the content; (b) consider the context, the resources to effectively implement the program; and, (c) consider the process we will follow in making

changes to improve student achievement. The importance of attending to all three components is essential yet challenging as this is done simultaneously, not in stages.

Leaders are integral throughout the district in order for the professional development program to be a success and achieve the desired student achievement goals. Classroom teachers are leaders as they work collaboratively with their peers to learn and implement the planned change. Principals and lead teachers assist with problem solving and assist in continuously monitoring their student achievement data to make adjustments in a timely manner. District administrators provide support for the principals and their staffs as the buildings align their planned changes with the district goals.

The eight core foundations of the IPDM include the following research based attributes (Showers & Group, 2002):

- Focus is on instruction and curriculum.
- The study of implementation is built in as a routine.
- All site and district personnel responsible for instruction participate.
- Specific student learning goals provide direction for the professional development efforts.
- Intensive professional development is provided.
- Collaboration is incorporated into the professional development plan with opportunities for teachers to work together available on a regular basis.
- Ongoing follow-up and technical assistance is built in the initiative.
- Formative evaluation ensures the regular and systematic collection of data relevant to the stated student learning goals. Summative evaluation provides

information about the cumulative impact of a planned change on student learning (see Figure 2).

Iowa's Student Achievement and Teacher Quality Act of 2001 (Iowa Code § 476, 2001) requires career teachers, those teachers beyond probationary status, to develop individual career development plans that align with the District Career Development Plan. Areas of inquiry and investigation could include, but would not be restricted to: (a) refinement of current practice; (b) acquisition of new skills; (c) development of curricula and programs; and (d) monitoring student achievement. Strategies or activities to address these areas of inquiry could include any of the following or a combination of these, but would not be restricted to: (a) action research; (b) peer observation; (c) professional dialogue; (d) classroom observation; and (e) study groups.

The career teachers would conduct a formative evaluation of their career plans. The primary criteria for the written review should be the effort, progress, and involvement reflected in their work and in the products of that work. The summative component would involve the development by the teachers' supervisor of a separate written evaluation for each staff member involved in the professional development program.

The expectation that the educator is a reflective practitioner is a predominant theme in action research, providing a renewal process at the classroom level as the effects of best practices at the classroom level are studied for their impact, helping curtail the growth of problems and ensure a healthy learning environment for students and staff alike.



## Iowa Professional Development Model:

### Student Learning at the Center of School Improvement/Staff Development

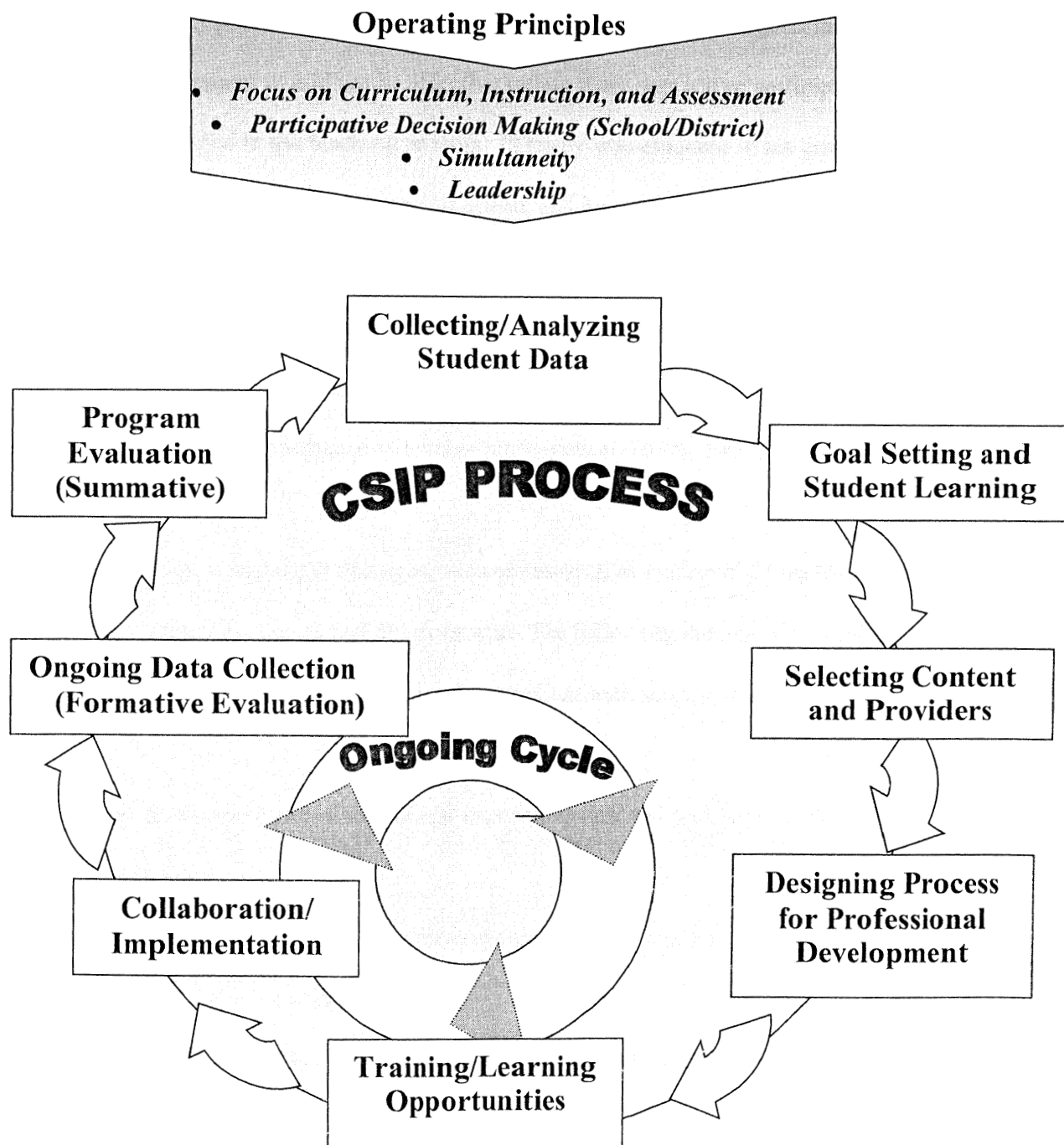


Figure 2. Iowa professional development model. The eight elements of the IPDM replicate an action research process. From *The Iowa Professional Development Model* by the ITQP Stakeholder Group, 2002, p. 3.

*Historical Overview: The Context Supporting Today's Action Research Practices*

The history of action research dates back to the early 1900s and can be divided into periods of key development in the twentieth century.

*Period One: 1900-1930*

John Dewey pursued the theme of the researching teacher and argued that curriculum development would not be effective unless there was active participation by those directly engaged in the teaching process. “Dewey was eloquent in his criticism of the traditional separation of knowledge and action, and he articulated a theory of inquiry that was a model both for scientific method and for social practice” (Argyris, Putnam, & McLain-Smith, 1985). Two defining attributes of action research are a result of Dewey’s work: its systematic, scientific approach to educational problems, and the acknowledgment of the importance of teacher participation (Holly, 1991).

*Period Two: The 1930s*

Kurt Lewin, a social psychologist, viewed research as cycles of action that would generate organizational change and development. The following themes of Lewin’s social systems research support why he is often credited with sowing the seeds of action science:

1. Action research involves change experiments on real problems in social systems.
2. Action research involves iterative cycles of identifying a problem, planning, acting, and evaluating.
3. Intended change typically involves *reeducation*, changing patterns or thinking and acting that are presently well established.

4. Action research is intended to contribute simultaneously to basic knowledge in social science and to social action in everyday life (Argyris et al., 1985).

*Period Three: The Late 1940s and Early 1950s*

Action research leaders at this time included Stephen Corey and Hilda Taba, teacher educators of Teachers College, Columbia University. Corey believed that the scientific method in education would bring about change because educators would be involved in both the research and the application of information. Taba cited two basic purposes for action research: (a) to produce evidence needed to solve practical problems, and (b) to help those who are doing the action research to acquire a more adequate perspective regarding their problems, deepen their insights, and enhance understanding of teaching methods and the content of learning (Glanz, 1998).

*Period Four: The 1960s and 1970s*

In the mid-1970s, Lawrence Stenhouse coined the phrase, teacher-as-action researcher. As a result of his leadership and that of his colleague, John Elliott, teachers were encouraged to see themselves as researchers, problem solvers, curriculum developers, change agents – all rolled into one (Holly, 1991).

Period Five: The Late 1970s and 1980s

Collaborative action research predominated this period. A collaborative partnership between internal and external facilitators and support personnel required a team approach. Collaborative action research was characterized (Oja & Pine, 1989) by the following elements:

- Classroom teachers and researchers mutually define research problems.
- Research findings are used in solving school problems.

- Teachers develop research skills and competencies.
- Teachers are more able to solve their own problems and renew themselves professionally.

The 1980s saw the school as a center of inquiry. A school built around action research integrated change and development at two levels – at the classroom learning level and at the whole-school organization level. Teamwork and learning communities were the legacy of this period. Action research was termed participative, fostering a sense of a community of learners with research rooted in the real world of teachers and their students.

### *Purpose of the Study*

The purposes of this study were (a) reveal teachers' perceptions of changed teaching practices as a result of their implementation of classroom action research; (b) identify teachers' perceptions of improved student achievement as a result of action research practices; and (c) provide the classroom teacher and district administrators a reliable source of information regarding decisions about the design, implementation, and evaluation of an action research professional development program.

A district or school is not unlike any other social organization in that it tends to settle into practices and ways of interaction that can become self-perpetuating. Ten years ago Calhoun stated, "Unless a process for renewal develops, and the organization adapts continually, the passage of time will ensure incremental drift toward obsolescence. What seemed to work at one time will lose its potency" (Calhoun, 1994). This study determines the effects of the renewal process, action research, on these elementary

teachers' practices and also their perceptions of students' learning as a result of their implementation of action research in their classrooms.

### *Research Questions*

This study addresses the following research questions:

1. How do teachers describe the changes, if any, in their teaching practices as related to their participation in the action research process?
2. How do teachers describe the changes, if any, in students' learning as related to their participation in the action research process?
3. How do teachers characterize their implementation of action research?

### *Methodological Overview*

This research took the form of an observational case study. This methodology is particularly useful for studying educational innovation and teacher action research (Bogdan & Biklen, 2003). Educational processes, problems, and programs can be examined to bring about understanding that can affect and perhaps even improve practice (Creswell, 1998; Merriam, 1988).

In this study, multiple methods of data collection were used to provide a comprehensive picture of elementary teachers as they practiced classroom action research. Participant observation was one data-gathering technique used as teachers of grades two and three were observed during their weekly team meetings and professional development sessions. This information was supplemented with formal and informal interviews and document review.

Innovation adoption is widespread in education (Hall & Hord, 2001). Change, or innovation adoption, is not accomplished simply because a decision maker has

announced it. Specifically, this study was designed to determine support for teacher action research conducted by Cardelle-Elawar (1993), Oberg and McCutcheon (1987), Oja and Pine (1987), and Auger and Wideman (2000) on changed teaching practices as a result of action research implementation.

In addition, research on teachers' perceptions of changed student achievement as a result of action research practices was reviewed (Andrews & Lewis, 2002; Bengier, 2000; Crowther, 1999) with the intent to determine support for these research findings.

Lastly, it was the intent of this study to contribute to the body of knowledge on innovation implementation (Hall & Hord, 2001; McDiarmid & Kelly, 1997; Purnell & Hill, 1992). Specifically, research on a school's implementation of teacher action research was reviewed to note if this study provided support for the individual implementation variations a school leaders can expect when introducing a professional development change (Oja & Ham, 1984; Purnell & Hill, 1992; Schmoker, 1999).

The data collected and analyzed provides specific experiences in the implementation of an action research professional development program through the descriptive behaviors of the innovation users. "In results-based professional development the target audience is students. However, it is also important to know how to improve a program, or what changes have occurred in educators' knowledge, attitudes, skills, aspirations, or how teachers' behaviors influence students" (Killion, 2002).

Using the observational case study method (Bogdan & Biklen, 2003), contributions were made to the research that supports grounded theory for classroom action research on data collection and analysis, teamwork, goal-setting, connection with action (Calhoun, 1994; Sagor, 2002; Schmoker, 1999) and change (Fullan, 2001). This

study added to the information base that identifies teacher behaviors that contribute to the successful implementation of a teacher action research professional development program.

Theorizing is “Thinking about one’s data –*theorizing* – is a step toward developing a theory that explains some aspect of educational practice and allows one to draw inferences about future activity” (Merriam, 1988). A grounded theory consists of three elements: (a) categories; (b) properties that describe these categories; and (c) hypotheses, the suggested links between categories and properties. Anderson and Burns (1989) advise that simpler theories are preferred to more complex ones and theories with fewer assumptions and concepts are valued over those with more assumptions and concepts.

The data was used to analyze, interpret, and theorize about teachers’ perceptions of change in their teaching practices and also students’ learning as a result of their involvement in an action research professional development program. Teachers’ perceptions of change were gathered using one of the three dimensions of the Concerns-Based Adoption Model (CBAM), the Measuring Levels of Use Survey (LoU) (Hall & Hord, 1975).

The LoU instrument is a focused interview that describes behaviorally how teachers are approaching their use of action research in the classroom. Certain questions are required at the start of the interview, providing some standardization; however, the design of this instrument provides more flexibility than a highly structured interview. It encourages more true-to-life responses, allowing the respondent to follow a natural train of thought.

The LoU dimensions describe the various behaviors of the user of action research through various stages –from spending most of their efforts in orientating, to managing, and finally to integrating their use of action research. The purpose of using this instrument was to assess a teacher's individual use of teacher action research and then identify appropriate intervention strategies and tactics that would facilitate that person's growth in use of the innovation and minimize any frustration caused by change (Loucks, Newlove, & Hall, 1998).

An Innovation Configuration Map (IC Map) (Hall & Hord, 2001) assisted in analyzing the operational patterns of the teachers' use of action research in their work with students and their study team members. The IC Map made it possible to characterize the different parts or components of the action research process. In terms of professional development activities, the IC Map provided a record of what teachers actually do, and provided clues as to how future professional development activities might be planned to either modify, complement, or change current practices observed. (Heck, Stiegelbauer, Hall, & Loucks, 1981).

Artifacts from the teachers' team meetings provided documentation of their individual and group applications of action research practices. Artifacts included the following: (a) logs of team meetings; (b) written reflections; (c) interview statements; (d) written observations of individuals and teams using action research in their classroom work; and (e) achievement data on students' achievement.

How the participants characterized their implementation of action research was documented in three ways. First, individual characterizations were collected using the LoU focused interview. Second, group characterizations were collected using the IC



Map that was completed by each teacher as a self-evaluation and also by the researcher at the conclusion of the study. Third, the facilitator of each grade level team recorded and submitted to the researcher the status of their action research work on district forms that served as team logs.

### *Limitations*

This observational case study was limited to teachers of grades two and three in one elementary school in a single Midwestern suburban school district. The teachers were in year two of a district-wide professional development program focused on teacher inquiry and action research. The building principal selected the two teacher teams that participated based on the number of years the team members had practiced teacher action research. The rich description and interpretation of a case study is most advantageous to counter the implications of non-random sampling. This study provided information to support grounded theory intended to not only assist districts in their implementation of a teacher action research professional development program, but to also better understand the impact action research has on teaching practices at the elementary level.

“It is not necessary to have the ‘right’ theory, but to have one that provides a roadmap, highlights its essential components, and explains how the program is expected to achieve the desired outcomes” (Killion, 2002). Participants’ responses to interview questions revealed a pattern of interpretation that provides factors significant to the implementation of an action research professional development program. This method shed light on the connections between the teacher participants, their instructional practices, planned interventions, and teacher action research professional development.

### *Definition of Terms*

*Action Research* is a disciplined process of inquiry conducted *by* and *for* those taking the action. Whatever the scenario, action research involves the same seven-step process: (a) select a focus; (b) clarify a theory; (c) identify research questions, (d) collect data, (e) analyze data, (f) report results; and (g) take informed action (Sagor, 2000).

*Change* involves an understanding of the following six guidelines: (a) the goal is not to innovate the most; (b) it is not enough to have the best ideas; (c) appreciate the implementation dip; (d) redefine resistance; (e) reculturing is the name of the game; and (f) never a checklist, always complexity (Fullan, 2001).

*Innovation Bundle* describes two or more independent processes and ideas that contain more than one innovation (Loucks et al., 1998).

*Innovation Configuration Map* presents carefully developed descriptions of different ways of doing an innovation, e.g., teacher action research.

*Levels of Use of the Innovation (LoU)* describes the behavior of individuals as they become more familiar with and more skilled in using an innovation (Loucks et al., 1998).

*Teacher Research* is a process in which participants systematically examine their own educational practice using the techniques of research (Caro-Bruce, 2000).

*Reflective Practitioners* identify categories of knowledge that are requisite for successful reflective teaching (e.g., content, pedagogy, curriculum). . . . (they) make conscious, rational decisions based on a solid and defensible knowledge base (Reagan, Case, & Brubacher, 2000).

*Teacher Inquiry* focuses on the concerns of teachers (not outside researchers) and engages teachers in the design, data collection, and interpretation of data around their question (Dana & Yendol-Silva, 2003).

### *Summary*

This chapter described teacher action research, federal and state legislative expectations and guidance, and provided an overview of action research, along with the study's problem, purpose, and research questions. At the conclusion of this chapter, the researcher provided an overview of the methodology and limitations of this research along with definitions of terms included in this study.

In the next chapter a literature review is presented on the phenomenon of teacher action research and its use in classrooms. It continues the historical review by focusing on action research trends of the last decade, the 1990s. Information in the literature review includes research studies and pertinent articles that describe and analyze the practice of teacher action research in the classroom and teachers' perceptions of students' learning as a result of implementing this innovation.

The development of Chapter 2 was iterative. Throughout the study, the review of literature was expanded based on themes that developed as a result of observational notes, and both informal and formal interview data.

## Chapter 2

### LITERATURE REVIEW

The goal of this study was to find support for grounded theory on the design and implementation of action research in elementary schools. This was accomplished by learning how the teaching practices of teachers participating in an action research process were impacted, how the students' learning was affected as a result of these teaching practices, and how the participants characterized their implementation of the action research in their classrooms. For this study, research literature was surveyed in three general areas: (a) the benefits of action research on teaching practices; (b) how action research impacts student achievement; and (c) the elements that characterize collaborative action research.

This literature review lays the framework that guided the selection of the research questions and the appropriate methodology to search for answers. As is accepted in qualitative research, the formulation of this literature review was an iterative process. The review of the literature was expanded and refined throughout the study, based on the issues that emerged from the field research. Once the findings seemed sufficiently developed, they were related to the current literature in the field to integrate them with the other literature in the field (Merriam, 1988).

National and state mandates for professional development provide a baseline standard for what is expected of teachers and school districts. The expectation is that professional development is effective in improving student achievement and also meets the needs of educators. Action research is one process that, by design, addresses the

needs of adult learners and is a professional development program that can be implemented throughout the school day.

This literature review begins with a summary of the last decade of trends in the action research movement and brings closure to the historical overview shared in the study's introduction.

### *Action Research: A Decade of Trends*

Cochran-Smith and Lytle (1999) conducted a meta-analysis of the teacher research movement in the 1990s. During this decade, classroom teachers who embraced the practices of researching and teaching were viewed as “knowers and thinkers, or as ‘RE-searchers,’” ones who did not need more findings from university-based researchers, but more dialogue with other teachers that would generate theories grounded in practice. See Table 3 for the five major trends identified as characterizing the action research movement in the U.S. during the 1990s. The first two trends inform this study.

Table 3

#### *Action Research Trends of the 1990s*

Trend	Characteristics
1	Prominence of teacher research in teacher education, professional development, and school reform
2	Development of conceptual frameworks and theories of teacher research
3	Dissemination of teacher research beyond the local level
4	Emergence of critique of teacher research and the teacher research movement
5	Transformative potential of teacher research on some aspects of university culture.

*Note:* Information is taken from “The Teacher Research Movement: A Decade Later” by M. Cochran-Smith and S. Lytle, 1999. *Educational Researcher*, 28, 15-25.

Trend one focused on the prominence of teacher research in teacher education, professional development, and school reform. This trend described the teacher who has learned how to teach and improve one's teaching by collecting and analyzing the data of daily life in schools.

Trend two had two conceptual frameworks that supported this study: (a) ways of knowing in communities, and (b) practical inquiry. In conceptual framework one, learning communities, teachers generated local knowledge of teaching, learning, and schooling when they made classrooms and schools sites for research, they worked collaboratively in inquiry communities, and took critical perspectives on the theory and research of others (Cochran-Smith & Lytle, 1999). The goal of this theoretical practice was to create classrooms and schools where rich learning opportunities increase students' opportunities in life.

Supporters of conceptual framework two, practical inquiry, believed some of the most essential knowledge for teaching was practical knowledge that was embedded in teachers' everyday work. This theory emphasized the importance of teachers' reflections in and on their practices and characterized a teacher's knowledge as craft knowledge. The teacher brought his or her understanding of teaching and learning into the everyday practice of teaching.

Cochran-Smith and Lytle (1999) were cognizant of the standards movement as they approached the turn of the century. They posed the following challenges they anticipated a teacher researcher of the early twenty-first century would confront:

- How to define and justify appropriate 'outcomes' of inquiry-based teacher education and professional development

- How to reconcile the idea of co-construction of knowledge by teachers and their students
- How to hold on to the larger goals of democratic education in the face of intense pressure to evaluate success based on students' performance on high-stakes tests
- How to support communities of teachers working together on the questions that matter to them in light of mandates at many levels to collaborate on the implementation of system policies. (p. 22)

In this current decade of reform, educators experience change created by the sanctions of the No Child Left Behind Act of 2002. Teachers are making data-driven decisions that impact their teaching practices and their students' learning. Guidance in the design and implementation of a professional development program to support this complex change is set forth in the professional development standards of the National Staff Development Council (NSDC). Standard one, learning communities, standard two, leadership, and standard three, resources, all provide a contextual framework for school improvement guided by action research.

### *Benefits of Action Research on Teaching Practices*

“Recent years have witnessed greatly increased appreciation of the centrality of good teaching to the effectiveness of schooling and of the role of research on teaching in developing a knowledge base to inform the teaching profession” (Porter & Brophy, 1988). This message conveyed by Porter and Brophy in the late 1980s is just as applicable as we approach the midpoint of the first decade of the twenty-first century. Ways to assist teachers to become independent thinkers in the classroom are

still needed. If teaching is to be improved, we must attend to the teacher as a decision maker (Clift & Say, 1988).

Cardelle-Elawar (1993) examined ways to help teachers reflect deeply about what they were doing. The purpose of her study was to examine an approach to enhance teachers' critical thinking and decision-making processes. The study emphasized teacher initiated research to develop an understanding about the meaning of becoming problem solvers. She taught teachers to learn from their experiences how to identify, define, solve, and assess the solutions to their individual concerns.

The study's participants included eighteen teachers from the same district who were trained by Cardelle-Elawar in a three-step decision-making process. First, the teachers were provided the opportunity to make a general assessment of their classroom instruction. Second, the role of the teacher as a reflective, decision-making professional was reviewed. Third, teachers designed a study to be carried out in their classrooms. As a result of this action research training, teachers reported the following experiences contributed to their successful decision-making skills:

- Critical thinking activities were perceived as productive and positive ways to actively engage teachers.
  - The spirit of companionship and experimentations emerged as they consulted with their colleagues for assistance and shared their expertise.
  - Each teacher had an opportunity to observe her class from an objective perspective.
  - More avenues of communication were opened between teachers from different grade levels, disciplines, and schools.
-



- The process of reflecting on how each teacher defined a problem and worked to its solution helped participants develop a genuine appreciation and acceptance of others.
- Isolation and passivism were replaced with an environment of collaboration and professional growth (Cardelle-Elawar, 1993).

Kyle and Hovda (1987) conducted a year-long project with graduate students that was designed to integrate language arts around the theme of action research. Lessons learned from this one-year experience were encouraging and revealing and spurred Kyle and Hovda to conduct a collaborative effort between the University of Louisville and the Jefferson County Public School Gheens Professional Development Academy of Kentucky to study how to best facilitate teachers' experiences as action researchers. The Academy's goal was aimed at restructuring schools in ways that would likely increase student success, and contribute to teacher growth, leadership and satisfaction. Similar to the concept of a professional development school, this cooperative venture met a variety of needs for both the university and school system.

Participants in the Classroom Research Study Group were graduate students who worked with Kyle and Hovda over a one-year period. However, the entire study was conducted over a three-year period, allowing Kyle and Hovda to observe and collect data from three different groups of graduate students. This extended study allowed the researchers to learn the importance of addressing initial and emerging perceptions of what research is, the significance of a support group, and the appropriate pace of activities, and which of those activities proved most beneficial.

They found that contextual constraints in schools inhibit teachers' efforts to study and resolve problems; however, teachers are willing to overcome some of those constraints when they are committed to instructional improvement. This three-year study convinced the researchers that teachers' involvement as action researchers is possible, appropriate, and beneficial.

'Do what I study, study what I do' is embedded in the professional role of the teacher action researcher. The concept of action research, whether it be individual, cooperative, or collaborative is built into the fabric of the teaching role. So, where only a few years ago the appeal of participation in action research was a personal option, it is now becoming a professional responsibility for many practitioners. (Kyle & Hovda, 1987)

Oberg and McCutcheon (1987) wrote that "Action research is essentially done for oneself to improve one's own practice, not for the benefit of others" (p.116). They interviewed nine teachers who had been involved in action research courses in their graduate studies. These teachers shared that their action research studies originated in problems of practice. Their concerns and commitments guided their inquiries. While action research caused some teachers to adopt more effective teaching methods, all teachers reported a positive change in their attitudes toward their professional practice. They reported feeling more confident, more effective and better able to cope with the tensions in their work.

The preceding study focused on experienced teachers and their work with action research yet Auger and Wideman (2000) studied the impact of action research practices on preservice teacher candidates. Knowing many of today's teachers will retire from the

profession in the next ten years, the researchers felt it critical that preservice teacher candidates are able to use action research.

“As reflective professionals, teachers use action research methods to investigate questions about their practice and to develop workable solutions that improve learning by all” (Auger & Wideman, 2000). Forty-two elementary and secondary teacher candidates volunteered for this project. One of the key findings was the importance of networking and mentoring. Participants cited the importance of being both an active listener and a critical friend when working with their teacher-researcher peers. Auger and Wideman cited their belief that beginning teachers need a crucial head start in taking responsibility for professional growth and for accountability. Action research enables teacher candidates to make a shift from thinking like students to thinking like teachers.

A common theme across the research studies reviewed is that reward of publication for teachers is likely outweighed by the time and energy required to organize, write, type, and submit an article on action research. Typically action research is conducted to improve one’s own practice and only those associated with the teacher researcher benefit from the work conducted. When published or presented, these studies open the classroom doors a bit wider so others have the opportunity to learn how teaching practices might benefit from a teacher action research professional development program. See Table 4 for a summary of these teaching practices impacted by the action research process.

Table 4

*Teaching Practices Impacted by the Action Research Process*

Teaching practice	Research study
Students are observed with a greater sense of acuity	Oberg and McCutcheon, 1987; Cardelle-Elawar, 1993; Auger and Wideman, 2000; Andrews and Lewis, 2002
Collecting data draws teachers' attention to the student's learning as a central focus	Oberg and McCutcheon, 1987; Auger and Wideman, 2000; Andrews and Lewis, 2002
Teachers can develop their own educational theories and translate these into practice	Auger and Wideman, 2000
Teachers emerge active listeners	Auger and Wideman, 2000
Collegial support encourages continued shared investigations of common concerns	Cardelle-Elawar, 1993; Auger and Wideman, 2000

Table 4 (*continued*)

Teaching practice	Research study
Teachers adopt more effective teaching strategies	Oberg and McCutcheon, 1987; Andrews and Lewis, 2002
Teachers challenge their peers to examine their findings on a deeper level	Auger and Wideman, 2000
Teachers adopt more effective teaching strategies	Oberg and McCutcheon, 1987; Andrews and Lewis, 2002
Teachers change their attitudes and the tone of their professional practice	Oberg and McCutcheon, 1987
Teachers feel more committed, happier, confident, more effective, more self-critical	Kyle and Hovda 1987; Oberg and McCutcheon, 1987
Teachers can chart their own courses in professional development and assume a greater role in instructional and school-wide decision-making	Kyle and Hovda 1987; Andrews and Lewis, 2002

Table 4 (*continued*)

Teaching practice	Research study
Teachers' use of research methods allows them to study their own practice	Kyle and Hovda 1987; Andrews and Lewis, 2002
Teachers recognize how disciplined inquiry can inform and influence practice	Cardelle-Elawar, 1993; Kyle and Hovda 1987; Andrews and Lewis, 2002

*Note:* Information is taken from the research articles cited in this section of the Literature Review.

Once involved in a teacher action research project, teachers begin to recognize how disciplined inquiry can inform and influence practice. The teacher-action researcher becomes an active participant in both research and teaching and acts upon the results of the action. This research behavior closely parallels teaching behavior. Participants see this dynamic revision as similar to what happens in teaching. The interactive quality of action research finds the teachers involved in a continuous state of dynamic revision (Longstreet, 1982).

Findings that support teacher action research note that good teaching is a thoughtful practice. Research on teacher thinking and decision making has added important information to our understanding of the principles and practices that collectively constitute effective instruction.

In summary, the good teacher is a thoughtful practitioner who operates with considerable autonomy yet purposefully works toward a set of goals (Porter & Brophy, 1988). Effective teachers are clear about what they intend to accomplish through their

instruction. Effective teachers take time for reflection and self-evaluation, monitor their instruction, and accept responsibility for guiding student learning. The primary goal of evolutionary school improvement is enhanced student learning; however, a healthier workplace for adults often evolves.

An action research professional development program designed using the National Standards of Professional Development as its guide is developed with the end in mind. That end includes the goals of change in student achievement and teacher practices. “For every item of research we adopt, we must conduct on-site action research. The collaborative research done at the local level is what makes formal research work. Outside research cannot be “installed like a car part – it has to be fitted, adjusted, and refined for the school contexts we work in” (Schmoker, 1999).

### *Impact of Action Research on Student Learning*

The Carnegie Forum on Education and the Economy published the report, *A Nation Prepared: Teachers for the 21<sup>st</sup> Century* (Carnegie, 1986). Educational reform leaders stated that the key to success lay in creating a profession equal to the task—a profession of well-educated teachers prepared to assume new powers and responsibilities to redesign schools for the future. By using action research skills, educators have the opportunity to be active participants in the redesign of schools as they contribute to the 21<sup>st</sup> century school improvement process.

Could a teacher’s participation in an action research focused professional development program impact the learning of his students? Does research support a complementary relationship between the level of a teacher’s use of a new program or

process and the learning of his students? Does a teacher perceive a positive impact on his students' learning as a result of his use of action research in the classroom?

A 1998-2000 research study conducted by Andrews and Lewis (2002) with a secondary school in Queensland, Australia involved an innovative change process called IDEAS (Innovative Design for Enhancing Achievement in Schools). The study focused on the process of change in the action of teachers versus change in the organizational structure of the school. At the onset of the study a survey was administered to explore teacher, parent, and student perceptions of how successfully the school was operating in relation to both student learning and a variety of contributing factors.

IDEAS has two major components, the IDEAS Research-based Framework (see Figure 3) and a five-phase school-based implementation strategy (see Table 5) known as the IDEAS process. Underpinning the IDEAS Research-based Framework are the concepts of professional community and shared leadership. Participants practice collaboration, de-privatization of teaching practices, reflective dialogue, and take pedagogical leadership roles in their schools (Andrews and Lewis, 2002, p. 238).



Figure 3. Research-based framework (See Andrews and Lewis, 2002)

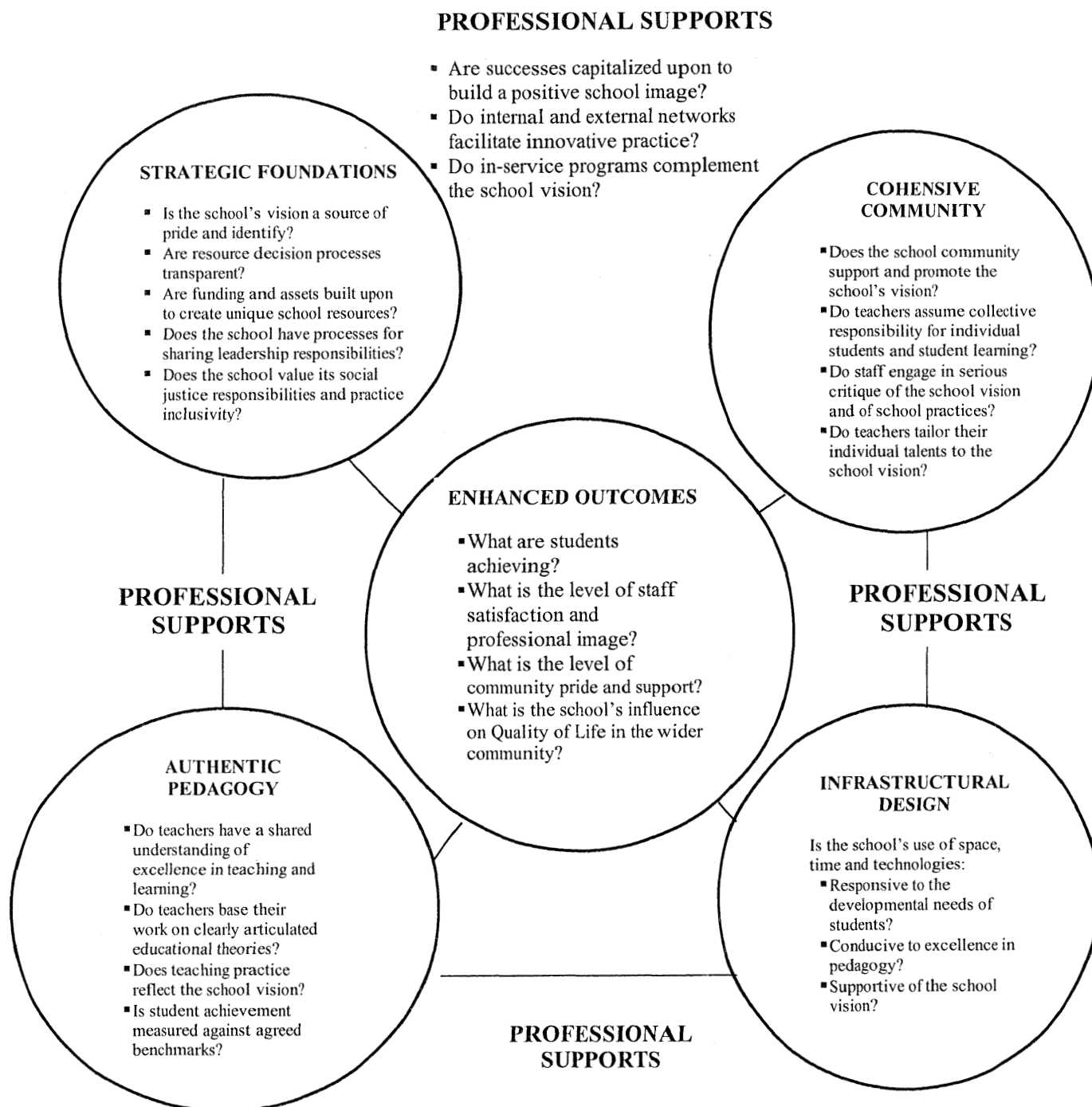


Figure 3. The IDEAS research-based framework highlights improved student achievement and community building. From "The experience of a professional community: teachers developing a new image of themselves and their workplace" by D. Andrews and M. Lewis, 2002. *Educational Research*, 44, p. 253.

Table 5

*IDEAS Process: A Five-Phase School-Based Implementation Strategy*

Phase	Reflective questions
1. Initiating	How will we manage the process?  Who will facilitate the process?  Who will record our history of the process?
2. Discovering	What are we doing that is most successful?  What is not working as well as we would like it to?
3. Envisioning	What do we hope our school will look like in the future?
4. Actioning	How will we create a three-part action plan?  How will we work towards the alignment of key school elements and process?
5. Sustaining	What progress have we made towards school-wide pedagogy?  What school practices are succeeding and how can we expand them?

*Note:* Information is taken from “The experience of a professional community: teachers developing a new image of themselves and their workplace” by D. Andrews and M. Lewis, 2002, *Educational Research*, 44, p. 254.

Expected school outcomes listed in the Research-based Framework anticipate enhancement of student achievement, the development of a professional learning community, the development of strong school community support, and the enhancement of the image of the school within the community.

The study shared was focused on the experiences of a professional learning community, the faculty of White Rock State High School, a secondary school of 400 students and 37 teachers located in a prosperous rural community in southern Queensland, Australia. Ten teacher volunteers participated in the study. They were identified as the IDEAS Group and represented a range of experiences, backgrounds, and beliefs that later proved invaluable in the development of their professional learning community.

The study followed the ten volunteers as they progressed through the IDEAS implementation process: initiating, discovering, envisioning, actioning, and sustaining. “It (IDEAS) captures the experience of teacher leaders within the professional community and the resultant perceptions of change on individual and group learning as they created their school for the twenty-first century” (Andrews & Lewis, 2002).

Findings of this study supported the belief that shared understanding developed through professional learning can impact teacher action in the classroom. Regarding student achievement, interviews recorded the perception of teachers towards a change in their approach to meeting student learning needs. At this stage in the study, evidence of student learning was limited to teacher perceptions of the impact on classroom work. There was a strong perception that teacher practices had positively impacted their action in the classrooms and, as a result, teachers believed they had made an impact on students’ learning experiences (Andrews & Lewis, 2002). The research report noted that collecting evidence on student learning beyond this perception was beyond the scope of the paper.

A major process objective of staff development is to support reflective teaching and facilitate the teacher as a researcher by encouraging teachers to conduct studies in the

context of teaching and reflecting on what strategies impact student learning (Joyce & Showers, 2002). To extend that reflection beyond the teacher's classroom, scheduled meetings with members of a learning community allow teachers to share reflections on the strategies that positively impact their students' learning.

As teachers work toward a collective vision that clarifies the nature of the problems that have brought them together, they gain a greater understanding of the complexities of the situation in which they are enmeshed. They also gain a more holistic understanding of the multitude of factors within which problems are embedded and realize the need to formulate increasingly sophisticated plans to resolve them (Stringer, 1999, p. 140).

If a collective study incorporates changed curriculum and instructional practices, immediate student-learning benefits can result. Collective study can also impact the adult learning community at the school. Over time, the teachers experience the iterative nature of action research and as a result of this continuous study, teachers are no longer isolated and work in a supportive team. The learning culture of the school benefits students and teachers alike.

The research question(s) guide the design of teachers' action research projects. In a 1992 study conducted in an Ohio second grade classroom, the teachers/researchers questioned whether a classroom intervention would remediate second grade students' achievement of place value concepts. This study demonstrates the potential of classroom teacher initiated action research in improved student learning.

Twenty-five second grade students from a school of approximately 500 students participated in this project. The school district was described by the Ohio Department of

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Education as located in a small city, with families having above average income, and a below average percent received aid for children. An interview was conducted with each student to determine if they did or did not reach criteria on a critical math objective related to place value at second grade. If not successful, the interviewer probed the student's understanding of objectives related to place value from first grade and kindergarten to establish a baseline instructional level.

Remedial activities were assigned for the 44% of the students not meeting the objective, and extension and enrichment activities were provided the 56% of the students who successfully met or exceeded the objective. There was no direct instruction provided either group of students. At the end of three weeks all students were reassessed on the second grade place value objective with 100% of the students able to meet the minimum objective and 44% of this group of students able to show two or three variations of the task required.

Teacher action research is conducted with improved student learning as the end goal. This research study concluded with the following recommendations to help ensure this goal was met:

In planning interventions for students, the connection between assessment and instruction can provide useful information to remediate students' concepts and skills. . . . Build on students' conceptual and skill understandings, use developmentally appropriate games and activities, and organize classroom learning centers to manage group and individual intervention experiences within the classroom. (Schmidt, 1995)

Increased student achievement is the central focus of a school district's work. The design and implementation of a teacher action research professional development plan has the potential of contributing to overall student achievement. In an unpublished dissertation focused on middle school teachers and their implementation of an action research professional development program, the researcher (Bengier, 2000) found that teachers properly trained in the use of action research are empowered to decide what, when, and where to teach the curriculum. In studying a collaborative team of teachers applying action research in their curricular work, the following observations were made:

- Action research would be one way that teachers could feel a part of the decision making in a school.
- Action research was viewed as a viable tool for teachers to use in examining their own practices.
- Use of action research empowered the teachers to make their own decisions based on their own examination of their practices.
- The action research process made the teachers aware of their decisions and allowed them to plan "on paper" so they could all be on the "same page" (pp. 85, 87, 100-01).

A teacher action research project conducted with middle level students studied the effects of integrated math and science instruction (Judson & Sawanda, 2000) on student achievement. The research question posed was, "Does integrating mathematics into a science class affect achievement in the math class?"

In this particular study, two classes were chosen to participate. There was a control group of 26 students and a treatment group of 27. The differences in

achievement between the control and treatment groups can be seen graphically (see Table 6) with a grade distribution of the treatment group that is significantly different at  $p < .005$  from the grade distribution of the control group. Findings revealed students' achievement was positively impacted by this integrated instructional approach using Calculator Based Laboratories (CBLs) in science to complement the mathematics teacher's statistics unit going on simultaneously over a three-week period in the students' math class.

Table 6

*Letter Grades in Statistics for Control and Treatment Groups*

Letter grade	A	B	C	D	F
Control group ( $n=26$ )	4	5	3	7	7
Treatment groups ( $n=27$ )	11	10	5	1	0

*Note:* Information is taken from "Examining the effects of a reformed junior high school science class on students' math achievement" by E. Judson and D. Sawanda (2000), *School Science and Mathematics*, 100, 8, p. 421.

A teacher action research professional development program enhances student achievement and teaching practices. Stories relating multiple students' and teachers' successes are shared in Schmoker's (2001b) book, *The Results Fieldbook: Practical Strategies from Dramatically Improved Schools*, a collection of fifteen teacher action research projects that positively impacted the achievement of those students involved. "People accomplish more together than in isolation; regular, collective dialogue about an agreed-upon focus sustains commitment and feeds purpose; effort thrives on concrete evidence of progress; and teachers learn best from other teachers" (Schmoker, 1999).

Today, educators are being pushed to measure the impact of professional development in terms of demonstrable improvements in student learning. Educational improvement efforts that do not take into consideration the complex nature of the relationship between professional development and improvement in student learning, or the various factors that impinge on that relationship, are unlikely to succeed (Guskey, 2000). Student learning outcomes should have an important role in determining the content, process, and context of professional development. In most cases, student-learning outcomes should provide the starting point for *all* school improvement and professional development efforts.

#### *Characteristics of a Collaborative Community of Learners*

By the late nineteenth century, American public schools were organized according to the concepts and principles of the factory model. William T. Harris, an influential educational leader in the United States and the commissioner of education, wrote in the late nineteenth century, “Our schools are, in a sense, factories in which the raw materials (children) are to be shaped and fashioned in order to meet the various demands of life” (Fiske, 1992).

The standardization and bureaucracy of the factory model were predominant characteristics of the school districts of this time period. The factory model is inadequate in meeting the national education goals of today--goals that call for *all* students to master rigorous content, and achieve academic proficiency in reading, math, and science. To meet these challenges, educators must look to research that justifies abandonment of the factory model and recommends creating a professional learning community as the best strategy for school improvement.



In the late 1970s and into the 1980s, the National Institute of Education (NIE) sponsored a series of research projects on collaborative action research. The study, Action Research on Change in Schools (ARCS) was preceded by two other NIE funded projects, Interactive Research and Development on Teaching Study (IR and DT), (Tikunoff, Ward, & Griffin, 1979); and the Interactive Research and Development on Schooling Study (IR and DS) (Griffin, Lieberman, & Jacullo-Noto, 1983).

At the time of this project, research on effective teaching and effective schools emphasized the need for teachers to investigate the application of research to practice. That need has not diminished and some may say has gained momentum with the turn of the century.

First, it was assumed in the ARCS project that collaborative action research is characterized by several elements. Those elements specific to this study are included the following list along with references to university partnerships that are not applicable to this study yet are included for the benefit of those designing collaborative relationships:

- Teachers and university researchers mutually define research problems.
- Teachers and university researchers collaborate in seeking solutions to school-based problems.
- Research findings are used and modified in solving school problems.
- Teachers develop research competencies and university researchers educate themselves in field-based research methodologies.
- Teachers are more able to solve their own problems and renew themselves professionally.
- Teachers and university researchers co-author reports of findings.

In the ARCS Project, university researchers collaborated with teachers from two public middle/junior high schools. One teacher team was from Michigan and the other from New Hampshire. All teachers on each team were from the same school, so they shared the same context, making it possible to assess different teachers' perceptions of the same school. A university researcher and a graduate research assistant/documenter completed the membership for both teams.

Over a two-year time period, data was collected using: (a) audio recordings of all team meetings; (b) transcripts of selected meeting tapes; (c) written documentation of all team meetings; (d) teacher logs; (e) pre-post questionnaires with participants; and (f) interviews conducted at critical points in the research process with participants, school administrators, and other staff members.

The ARCS Project sought to describe how teachers in groups functioning at different interpersonal stages of development viewed issues in collaborative action research. Table 7 suggests a match between an individual's interpersonal development stage and a description of their collaborative action research group, their group process, and the issues they perceived as important (Oja & Ham, 1984).

Since collaborative action research requires team members to take the perspective of team members, a development model is helpful in understanding problem-solving activities. Understanding where team members fit within the Interpersonal Stages of Development model assists team facilitators in the implementation process of the team's action research project. In the ARCS Project, the characteristics of teachers according to their developmental stage scores were used to examine individual teacher participation in and perception of issues related to the collaborative research process (Oja & Ham, 1984).

Table 7

*Description of Collaborative Action Research Characteristics in  
Terms of Interpersonal Stages of Development*

Developmental stages	Group's description	Group's processes	Group's issues
Self-Defining	Post-conventional learning and growth center (ideal just community)	Concern with human growth and development; creativity, flexibility, change, "real" learning	Collaborative direction and authority, respect for contributions of individuals and how best they add their talents to the action research process
Goal- Oriented	"Conscientious": the efficient, effective, committee with concern for interpersonal communication	Concern with achievement, rational thinking, planning, coordinating events, responsibility, mutual concern for communication	Ranking of authority and control, defined tasks for individuals in order to keep the structure efficient

Table 7 (*continued*)

Developmental stages	Group's description	Group's processes	Group's issues
Conventional	"Conformist": most committees typify this type	Concern with belonging, social acceptability, conformity to external expectations; guilt for breaking rules	Rule-oriented, concern for a person's role and status within one system of rules
Self-Protective	Authoritarian	Concern with power and authority and consequently tendency toward manipulation of researchers by teachers or teachers by researchers	Authoritarian control, rigid system of rules and rankings of the individuals in the group

*Note:* Information is taken from "A Cognitive Development Approach to Collaborative Action Research with Teachers" by S. Nodie Oja and M. Ham (1984), *Teacher College Record*, 1, p. 173.

The data revealed by the ARCS Project showed that the teachers' different developmental stages were important in a number of dimensions in the team's research focus and group processes, including: (a) teachers' goals for the project; (b) attitudes toward a change process; (c) authority and group leadership; and (d) teachers' perceived outcomes from the project (Oja & Ham, 1984).

In the ARCS project, teachers focused on the school-based problems of scheduling and teacher morale. Teachers at different interpersonal developmental stages perceived, discussed, and achieved the goals in individual ways. Each teacher's

developmental level also influenced his reactions to change issues in both school context and the action research process.

Sample excerpts from interview transcriptions (see Table 8) show that a teacher's definition of change allowed the ARCS project research team to determine that person's developmental level. As a result of their participation in the ARCS Project, all teachers were more familiar with research language, methodology, and design. They became better consumers of educational research and some wanted to become more skilled researchers (Oja & Ham, 1984).

Table 8

*How Teachers Define "Change"*

Change is...	Developmental stages
Usually made for financial (external) reasons; it is a one-shot episode.	Conventional
A process; it starts with a need, but must be based on understanding and caring.	Traditional
Successful if it involves individual growth; it must satisfy the internal needs of teachers and students.	Goal-Oriented
A flexible process involving a lot of alternatives; successful change agents have to view small changes within a broader context.	Self-Defining

*Note:* Information is taken from "A Cognitive Development Approach to Collaborative Action Research with Teachers" by S. Nodie Oja and M. Ham (1984), *Teacher College Record*, 1, pp. 181-182.

Teachers on the team expressed a variety of different perceptions regarding the school context, collegiality with other teachers, themselves as researchers, and action research approaches to school problems. In-depth analysis of the data indicated these differing perceptions often reflect the teachers' stages of adult development (Oja & Pine, 1989). See Table 9 for a variety of perceived outcomes teachers shared as characterizing their implementation of action research in their classrooms and schools.

Table 9

*Teacher-Perceived Outcomes of Action Research*

Teacher characterization of action research implementation	
School context	
▪	Better understanding of the working of the school
▪	Greater understanding of the problems and decisions faced by school administration
▪	Greater knowledge of the complexity of the hierarchy of decision-making processes in the school
▪	Better understanding of school issues
▪	More fundamental grasp of the relationship among scheduling, curriculum, and school philosophy
Collegiality	
▪	Creation of new patterns of communication, collegiality and sharing
▪	Knowledge of the dynamics of collegiality and its influence on sharing and school problem solving

Table 9 (*continued*)

Teacher characterization of action research implementation	
Collegiality	
<ul style="list-style-type: none"> <li>▪ Greater willingness to communicate concerns and experiment with solutions</li> <li>▪ Gaining support and emotional strength from team members in confronting day to day problems and issues</li> <li>▪ Sharing and building a common body of knowledge</li> </ul>	
Teacher skills and attitudes as action researchers	
<ul style="list-style-type: none"> <li>▪ Choosing a school-wide review of the state of practice to develop a conceptual basis for their work</li> <li>▪ Using internal resources in the school to examine a problem</li> <li>▪ Collecting information from the thinking of other teachers (through survey data and interviews) to define and address problems</li> <li>▪ Seeing research design as recursive rather than static</li> <li>▪ Viewing research as less intimidating and feeling more comfortable and knowledgeable in conducting research</li> <li>▪ Seeing themselves as professionals whose opinions were valued and respected</li> </ul>	
Collaborative action research	
<ul style="list-style-type: none"> <li>▪ Seeing action research as an effective problem solving model</li> <li>▪ Valuing collaborative action research as a model of staff development</li> </ul>	

Table 9 (*continued*)

Teacher characterization of action research implementation
Collaborative action research
<ul style="list-style-type: none"> <li>▪ Developing a more comprehensive understanding of educational problems and their possible solutions</li> <li>▪ Experiencing collaborative action research as a source of personal and professional renewal and intellectual stimulation</li> </ul>

*Note.* From “Collaborative Action Research: Teachers’ Stages of Development and School Contexts,” by S. N. Oja and G. J. Pine, (1987), *Peabody Journal of Education*, 65, pp. 107-110.

Findings of the ARC Project better define implications for future action research professional development programs. Using the interpersonal developmental stages, a change facilitator can support and challenge teachers according to the characteristic needs of their developmental stages. Teachers learning something new are no different than their students acquiring new knowledge and skills. If growth is to occur, a person needs both a challenging learning task and intensive personal support for the required risk-taking.

Knowledge of the characteristics of teachers’ perspectives at each developmental stage can help a change facilitator recognize the specific interventions needed to support and challenge each team member both individually and in their contributions to the team’s research tasks, process, and group dynamics. Awareness of teachers’ stages can help the facilitator understand the teachers’ decision making on the team and recognize the dimensions of individual teacher change within the context of the school and the collaborative action research team.



In conclusion, the ARCS Project participants valued the team process and perceived personal change and growth as a result of the action research process. It was their experiences on the team that they would take back with them into the everyday activities of their classrooms, schools, and districts.

### *Professional Development Considerations*

The iterative nature of a qualitative study prompted the inclusion of professional literature reviewed on professional development and the resource, time. Similar findings that complement those in the preceding study by Oja and Pine (1989) were observed and recorded by McDiarmid, Williamson, and Philip (1997) when they examined how Kentucky teachers perceived their needs and how to best meet those needs in the context of systemic reform. They reviewed 21 case studies of Kentucky schools that were part of the project, Professional Development in the Service of Systemic Reform, along with results of a 1995-1996 telephone survey focused on a teacher's personal professional development options and choices made. From the data collected, the following themes related to professional development emerged (see Table 10).

Of particular interest to this study, the theme, character of professional development, sorted professional development data into three primary categories: (a) traditional inservice practices such as lectures and passive video or slide presentations; (b) schools as learning communities, focused on efforts to improve curriculum, instruction and assessment that involve small working groups of teachers; and (c) innovative paradigm, targeted activities typically for reform practices such as collegial observations, action research, and research-based instruction.

Table 10

*Using Systemic Reform to Address Professional Development Practices and Affects*

Theme	Descriptors
Planning process	Needs assessment, funding, activities and tasks
Decision-making process	Roles and influence of facilitators
Professional development decisions	Agreements between needs and decisions made
Character of professional development	Form, focus, and perceived quality of professional development program
Teachers' reactions/responses	Teachers' evaluation of activities and tasks
Unintended consequences	Observed unintended results

Of the 623 professional development activities reported by the 77 schools in the sample (McDiarmid et al. 1997), almost half fit the traditional description of lectures, and passive presentations. Another 17% of the professional development plans were described as 'schools as learning communities,' with only 10% identified as innovative paradigm activities. The remaining 24% did not meet the three primary categories.

When this data was disaggregated according to the level of the school, 12% of the 164 high school activities were categorized as innovative, and 13% of the 146 middle school activities were innovative. In contrast, only 7% of the reported elementary activities were classified as innovative. Few teachers in the schools sampled had experienced innovative paradigm professional development activities such as study groups, action research, and teacher networks and most focused on how best to prepare pupils for the state test and other district-wide assessment measures. McDiarmid et al. found (1997) the following:

decisions teachers make about professional development are based largely on their desire to raise students' test scores. . . . Linking teachers' professional development to evidence on student learning is precisely the alignment that advocacy groups such as the National Commission of Teaching and America's Future . . . have recommended. (pp. 16-17)

In 1997, at the time of this study, these Kentucky teachers were meeting their professional development needs in less ambitious, more traditional forms. However, it is anticipated teaching practices will need changed to meet the deeper academic needs of specific students as McDiarmid et al. (1997) predicted:

The rise in student assessment results that teachers in most schools have realized over the past four years may be leveling out. . . . If scores clearly plateau in the next assessment cycle, teachers may well look for innovative ways to enhance their own knowledge and skills to help improve their pupils' state assessment scores. (p.20)

### *Time and Reform Practices*

Successful school reform requires adequate time for teachers to participate in the change. "Ironically, how a school organizes and uses time is both the object of restructuring and the chief impediment to change" (Purnell & Hill, 1992), and the need to create time for teachers to implement classroom action research with fidelity requires training, the exchange of ideas and experiences, and practice.

In their study on school restructuring and the implications of time, Purnell and Hill (1992) conducted an extensive review of professional literature that documented the efforts of individual schools to enact change. They supplemented this data with a review

of business management journals of the early 1990s and found insights that related to creating time for change in schools. Lastly, they conducted interviews with representatives of over 40 organizations involved in school reform that included school districts, school administrators, school restructuring networks, and union and professional organizations.

To implement a reform practice appropriately, Purnell and Hill (1992) found four issues needed addressed. First, the priorities of the school must be readjusted with the willingness to either reallocate priorities or abandon practices that no longer contribute effectively to the school's mission. Part of implementing a reform practice is abandonment of something the teachers currently are expected to do. Just as businesses free up resources to introduce a new product, schools must terminate a practice that does not hold the promise of the proposed reform practice.

Second, time demands associated with reform in a school are substantial. Research reviewed by Purnell and Hill (1992) identified lack of time and energy on the part of teachers and also lack of money as primary implementation challenges. These researchers shared the following:

In the private sector, factories shut down for retooling and stores close for remodeling. The restructuring of schools, on the other hand, takes place while the school continues to operate. Thus, the time needed for reform begins to appear really daunting when placed next to the everyday time demands of the teaching profession. (p. 13)

Third, the incremental nature of change requires a realistic time frame for how quickly the reform innovation will become part of the school's culture and the teachers'

repertoire of skills. School improvement is not a single event but a process that requires a sustained commitment of time. Time needs provided for up-front experimentation and also follow-up assistance and practice. The teachers need time to learn the skills required to advance through the phases of change they would experience if the reform is to be practiced with fidelity.

Fourth, the allocation of time must take into account the character of the reform. Successful implementation depends on scheduling time with appropriate lengths, frequency, and availability to the participants. Purnell and Hill (1992) suggest facilitators of the reform address the following factors:

- Determine which staff members need to work together
- Determine how often key participants need time away from class or need the opportunity to work together
- Determine how long extra time and meeting opportunities need to be provided
- Identify the competition, i.e., other building and district expectations

Those leading the reform-based initiative should allocate the appropriate time needed for the type of reform being implemented. Leaders must consider which staff members should work together for how often and how long, and identify what else is competing for the teachers' time and either abandon or reallocate these items on the list of school priorities.

Most school districts are faced with the restriction of a nine month school year; however, research conducted by Purnell and Hill (1992) provided time-creation devices a district can consider when planning to implement a reform practice. These researchers found that restructured schools employ any of the following approaches for creating time:

- Increase non-classroom time for teachers during the course of the school day
- Refocus existing time slots to new uses
- Reschedule the school day
- Increase the total amount of time available
- Encourage teachers to use their own time
- Promote more efficient time use

In a similar study conducted by Watts and Castle (1992), 31 schools and 14 school districts that participated in programs sponsored by National Center Programs were surveyed with the goal of revealing strategies used by educators to find time for restructuring. The following five strategies emerged as they examined the survey data. Several of these strategies complemented those cited by Purnell and Hill (1992).

Examples of each strategy are shared:

- Freed-up time. This breaks teachers out of the traditional constraints by use of various intervention tactics.
  - Assign teaching assistants to cover elementary classes at regular intervals so teachers can meet together to plan.
  - Involve administrators who take over teachers' classes on occasion to free up the teachers for planning.
- Restructured or rescheduled time. A formal alteration of the traditional calendar, school day, or teaching schedule is implemented.
  - Add student time on four days, so that one day a week the students are released early.

- Reschedule the school day to create a first period before students arrive, making the students stay longer in the afternoon but allowing faculty to plan and work while fresh in the morning.
- Common planning time. ‘Common’ planning time among colleagues with similar assignments is scheduled.
  - Restructure the schedule for common grade-level planning.
- Better-used time. Ways of using the current schedule and professional development are designed for efficiency.
  - Structure ‘schools within a school’ groups of students and teachers providing more flexibility in scheduling time.
  - Establish a management council of teacher representatives who handle administrative affairs so faculty meetings for all teachers are used for talking, thinking, and sharing.
- Purchased time. This is a desirable but unrealistic time strategy.
  - Involve two teachers in restructuring efforts sharing one teaching assignment between them.
  - Use staff development funds to pay for half- or full-day mini-retreats.
  - Establish a ‘substitute bank’ of 30 to 40 days per year. Teachers can assess these days for committee work, special professional development activities, peer coaching, etc.

As these studies reveal, *time*, a finite resource, becomes an important consideration for any school that implements reform-based practices. Restructuring for

reform practices requires teacher interaction and collaboration. Schools in these studies rarely depended on just one solution to solve the challenges created when lacking time.

Those in the position to facilitate the selection of devices to create needed time should heed a common message both reviewed research studies shared; the assignment of the time and place for teachers to collaborate reflects the schools commitment to the reform.

### *Concluding Research*

Kyle and Hovda (1987) recommend interested schools contemplating an action research professional development program consider the following guidelines: (a) principals need to provide support for teachers engaged in such activities and engage in their own action research studies; (b) collegial dialogue with participants is essential; (c) a relationship based on shared decision-making, flexibility, and mutual responsibility for the success of the effort needs established; (d) meeting time for analyzing data, discussing interpretations, revisions, and written drafts needs allocated; and (e) support groups offer optimum involvement of teachers as action researchers, making it possible for the participants to learn more about themselves as teachers.

Jeffrey Glanz (1998) offers the following seven suggestions for district leaders who are interested in implementing action research to improve their schools:

1. Expect the unexpected. Research can be an unpredictable process.
2. Be receptive to both quantitative and qualitative approaches.
3. Give it your all. As a reflective practitioner, include an accurate written report of your findings and offer recommendations.



4. Don't make a decision too quickly. Make decisions thoughtfully after conducting a well-planned action research project.
5. Keep lines of communication open and clear.
6. Appreciate your enlightened eye. While observing in the classroom, look with an enlightened eye at interactions among teachers and students.
7. Take action. Respond to problems and do something.

For teachers and students alike, collaborative learning communities generate more learning than is possible for isolated individuals who are not part of a team (Martin-Kniep, 2004; Sagor, 2000). Students and teachers benefit greatly from the collaborative use of data and learning. Teachers involved as action researchers in the exploration of ways schools can be improved have the potential to make a difference at the classroom level, where the students' achievement is directly impacted.

School improvement evolves slowly or rapidly, depending in large measure on the schools' use of information to guide its action and shape the learning environment. A school that studies their current practices, guides their future practices based on their thoughtful use of internal and external information.

"Inquiry into the nature and goals of an organization carries with it the notion that increased clarity and additional information may lead to changes in behaviors and/or attitudes by members of the organization, in other words, changes in curriculum and pedagogy" (Joyce, Calhoun, & Hopkins, 1999).

The effects of Dewey's early 1900s work in applying a scientific approach to educational problems combined with his acknowledgement of the importance of teacher participation marked the introduction of action research in education that is still a powerful process one hundred years later. Dewey's work was complemented by Lewin's research model for social reform that made an impact beyond the confines of social reform. The elements of action research he identified are as applicable today as they were in the 1930s. The efforts of these two philosopher practitioners continue to benefit educators and their students in today's school improvement efforts.

Educators can discover for themselves what they should know in order to assist their students in knowing, too. Teachers practicing action research are learning from their practices what positively impacts student learning in their classroom. Teachers and students alike are challenged to expand their learning through the application of action research.

Schools that invest in teacher inquiry find they are recreating the professional practice of education. Schools that provide support for teacher researchers by making data available and promoting teacher inquiry are investing in their teachers.

### *Summary*

This chapter concluded the review of literature and highlighted key challenges faced by the classroom teacher in this era of legislative and public demands that have created a need for the simultaneity of an educator's duties. Educational action research,

touted by John Dewey in the early 1900s, continues to flourish in present day. While implemented using varied formats and following various research-based cycles, action research remains an innovative practice that holds promise in education.

Professional development and time are critical factors that contribute to the successful implementation of an action research project. When implemented appropriately, action research can positively impact the achievement of all students.

The next chapter presents the selected research methodology for this study based upon qualitative methods. Information included in Chapter 3 focuses on the research plan, including the sample population, the data gathering plan, and the methods of data analysis.

## Chapter 3

### METHOD

The purpose of this study was to investigate teachers' perceptions of the impact of action research on their teaching practices and student learning, and how teachers characterize their implementation of action research. Educators are inundated with innovations and change, be it a change in textbooks, teaching strategies, or classroom schedules; however, too many of these innovations have not resulted in improved student achievement. Many educators feel it is not the quality of the innovations that is lacking; rather, failure is due to lack of knowledge about and attention to the process of change and the requirements for successful change (Loucks et al., 1998). In this chapter, the qualitative case study design is discussed, including site selection, participants, instruments and procedures, data analysis, and protection of participant rights.

#### *Qualitative Research Design*

The selection of a research design is dependent upon how the problem of the study is defined and the questions it raises. The choice depends upon what the researcher wants to know. "Because of its strengths, case study is a particularly appealing design for applied fields of study such as education. . . . Case study has proved particularly useful for the study of education innovations" (Merriam, 1988).

An observational case study was used as the research design. Data were gathered by (1) observing participants in the study (2) formal and informal interviews and (3) a review of artifacts. The focus of the study was on the phenomenon, teacher action research, and how two groups of elementary teachers practiced this as part of their professional duties.

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When “a group” in an organization is the focus of study, researchers use the word “group” sociologically to refer to a collection of people who interact, who identify with each other, and who share expectations about each others’ behavior. Selection of participants from two teacher teams permitted the collection of additional data to show generalizability or diversity in which the researcher’s observation might be applicable (Bogdan & Biklen, 2003).

Interpretive case studies contain rich, thick description. These descriptive data were used to “develop conceptual categories or to illustrate, support, or challenge theoretical assumptions held prior to the data gathering” (Merriam, 1988). Following are examples of theoretical assumptions of programs involving teachers as researchers:

- Teachers work best on problems they have identified for themselves.
- Teachers become more effective when encouraged to examine and assess their own work and then consider ways of working differently.
- Teachers need time and space away from their daily routine to think deeply about their work.
- Teachers can provide help, support, and encouragement by working collaboratively. (Watts, 1985)

This research looked at specific groups of elementary school teachers and studied their participation in a teacher action research professional development program. The participants were observed when conducting their team meetings and focused on the implementation of action research in their classrooms and during their building level professional development sessions.

While participant observation served as the major data-gathering technique, this procedure was supplemented with focused interviews and a review of internal and external documents referred to as teacher, district, or building-level artifacts. See Table 11 for a summary of the data collection methods for each research question.

Table 11

*Summary of Data Collection Methods for Study*

Research questions	Data collection method
1. How do teachers describe the changes, if any, in their teaching practices as related to their participation in the action research process?	Observe participants during team meetings and professional development sessions. Interview teachers using the Measuring Levels of Use of the Innovation (LoU) focused interview.
2. How do teachers describe the changes, if any, in students' learning as related to their participation in the action research process?	Document analyses of teacher artifacts, e.g., comments/reflections on study team log; fieldwork observations supported by the IC Map; action research findings reports
3. How do teachers characterize their implementation of action research?	Interview teachers using the Measuring Levels of Use of the Innovation (LoU) focused interview; document analyses of teacher artifacts, e.g., comments/reflections on study team log; fieldwork observations supported by the IC Map

### *Selection of Research Site*

A research site that had participated in teacher action research for two or more years was needed for this study. In addition, the observed participants needed to meet the following criteria: (a) took part in professional development on teacher action research; (b) been a practitioner for a minimum of two years; and (c) implemented action research in the classroom.

Contact with school improvement consultants of Heartland Area Education Agency (AEA) 11, an intermediate education unit, and a Des Moines area educational program evaluator assisted in the identification of this public school district as the research site selected. The Heartland AEA 11 school improvement consultants and the program evaluator had worked with districts in this region on teacher action research professional development and concurred that this central Iowa school district was an appropriate site for the study of the problem and research questions posed.

All kindergarten through eighth grade staff of the district had been introduced to the practice of teacher action research midway through the 2001-2002 school year. A school improvement consultant of Heartland AEA 11 had provided initial training, with additional periodic support provided by users in a neighboring school district that had implemented action research two years previously. In addition, the local district and building administration provided follow-up support for the staff in their implementation of classroom action research.

These teachers were implementing an innovation bundle, meaning they had been trained in one innovation, the writing of a specific type of goal identified with the acronym of SMART with the expectation that they would use a second innovation,

teacher action research, in their classrooms to follow students' achievement of that SMART goal.

The SMART acronym represents the following attributes of a well-written goal: strategic, measurable, attainable, results-oriented, and time-bound. The result-oriented attribute of the SMART goal means research questions posed are answered with a result such as an improvement target. A SMART goal used in conjunction with the action research cycle, has the potential to be a driving force behind continuous improvement (Conzemius & O'Neill, 2002).

In order to contribute support to the themes that developed, a description of the school district and the elementary building in which this study took place, along with a description of each teacher team and its individual members follows.

### *District and Elementary School*

The school district, located in central Iowa, is medium-sized but rapidly growing with an enrollment of approximately 4,000 students. The city in which the district is located has a population of approximately 8,000, making it comparable to the size of several cities located near the state's capital; however, it is unique as five other cities' borders are within the school district's purview. This unique configuration of the school district's boundaries has contributed to its unequalled percentage of student population growth in the past five years, with new student population averaging 500 new students in each of the previous two years.

In all, six attendance centers serve the students in this district including three elementary schools, one 6<sup>th</sup>-7<sup>th</sup> grade school, one 8<sup>th</sup>-9<sup>th</sup> grade school and one high school. The number of students eligible for free and reduced meals in the district is nine percent.



The central office team is comprised of a superintendent, associate superintendent, a human resource director, a director of teaching and learning, a director of student services, and a business manager. There is one literacy integration specialist serving kindergarten through eighth grades, and a technology specialist for grades kindergarten through twelve.

The elementary school in which this study was conducted opened in the fall of 1993 and has had the same principal all of this time. The school's mission statement aptly reflects the culture of this building to provide a safe, caring environment that encourages a strong community of lifelong learning for all . . . children and adults. A brief synopsis of the school's mission is "Touching hearts . . . expanding minds!"

Originally the building housed early childhood students, pre-kindergarten through second grade. As the school district's population grew, the district adopted the concept of neighborhood schools versus that of one early childhood center and one upper elementary school. To accommodate this change, both elementary schools transitioned over a two-year period into two pre-kindergarten through fifth grade buildings. In fall 2000, district growth once more prompted a change in building configuration as a third elementary school was opened. At that time, pre-kindergarten students were no longer served at the building in which the study was conducted.

During her eleven year tenure as building principal, this school's instructional leader facilitated not only a change in the grade levels of children taught in her school, but also the construction of two new additions to the building to accommodate the population growth that shifted from 350 students in 1993 to 621 students enrolled in fall 2004.

The building had one counselor, a fifty-five member faculty organized into teams at each grade level, kindergarten through fifth grade, and one teacher team of related arts staff that included the areas of guidance, media, art, physical education, and music. In addition, special services were offered students who could benefit from any of the following programs: English as a Second Language, Extended Learning Program for identified gifted students, and a first grade reading lab not supported by Title I funds, but a program the district believed essential in providing support for the young reader. Six special education associates assisted the faculty and students in the delivery of the educational program. Support services were enhanced with the hiring of one health associate, a lunch associate, two part-time playground associates and one part-time physical education associate who assisted with double classes in kindergarten and first grade.

### *Participants*

Based on recommendations of intermediate agency staff and a local program evaluator, central Iowa schools were identified that were thought to exemplify promising programs with teachers who practiced classroom action research. From those recommended, the researcher contacted the teaching and learning director of the district represented in this study, who in turn referred the researcher to one specific building whose principal selected second and third grade classroom teachers ( $n=9$ ) who agreed to participate in this research study.

Selection was based on the teacher teams' length of involvement in the district's teacher action research program. All participants were observed in grade level team meetings, building-level professional development sessions, and they also completed a

post-focused interview with the researcher. See Table 12 for an overview of participants' demographics.

Table 12

*Participants' Demographics*

Grade level	Number of participants	Average teaching experience	Gender	Action research experience
Second	4	8 years	100% Female	2.5 years
Third	5	13 years	100% Female	2.5 years

*Instruments and Procedures*

Supportive data for this study was collected through fieldwork observations (see Table 13) using school visits, focused interviews, and document analyses of teacher, building, and district artifacts.

Table 13

*Fieldwork Timetable*

Fieldwork components	Timetable
Design of the Innovation Configuration Map	February 2004
Interview the participants in the study using the Levels of Use (LoU) instrument: two elementary grade level teams.	August 2004
Conduct weekly participant observations with the two teacher groups.	August – December 2004
Interview the participants in the study using the Levels of Use (LoU) instrument: two elementary grade level teams.	December 2004

In addition, two dimensions of the Concerns Based Adoption Model, the Measuring Levels of Use (LoU) of the Innovation and Innovation Configuration (IC) instruments, were used to collect data for this study (see Table 14).

Table 14

*Dimensions of Concerns-Based Adoption Model*

Dimension	Description
Measuring Levels of Use of the Innovation (LoU)	This instrument measured the various behaviors characteristic of each level of use. It is a developmental growth continuum that distinguishes eight Levels of Use by describing users' progress from familiarization with an innovation to increased sophistication in its use (see Appendix A).
Innovation Configuration Map (IC Map)	The Innovation Configuration Map (see Appendix H) was the tool that allowed the researcher to examine the concept, teacher action research, and how the participants demonstrated their understanding of action research through application in their classrooms.

*Note:* Information is taken from *Implementing Change: Patterns, Principles, and Potholes* by G. Hall and S. Hord (2001), p. 41, copyright by the Pearson Education Company; also *Measuring Levels of Use of the Innovation: A Manual for Trainers, Interviewers and Raters* by S. Loucks, B. Newlove, and G. Hall (1975), p. 6. Copyright by the Southwest Educational Development Laboratory.

The Measuring Levels of Use of the Innovation instrument requires certain questions be asked, yet flexibility in the use of follow-up questions allowed the researcher to avoid the inclusion of meaningless and misleading questions and encouraged the interviewee to follow a natural train of thought. A consequence of this flexibility required more vigorous interviewer training (Hall & Hord, 2001; Hall, Loucks,

Rutherford, & Newlove, 1975). When conducting a focused interview, it is also important that the interviewer and rater are both familiar with the innovation that is the focus of the interview, as well as some of the literature in the field.

To ensure reliability in the analyses of the focused interviews, a trainer certified by Dr. Gene Hall of the Southwest Educational Development Laboratory in the administration and rating of the instrument, Measuring Levels of Use of the Innovation (LoU), read the transcripts of all interviews and assigned levels of use for each of the seven categories and also designated an overall level of use for each teacher.

In addition, this certified trainer met with the researcher, provided professional advice in rating focused interviews using the LoU instrument, and supervised her application of the scoring procedures on sample interviews. The developers of the LoU instrument stress the potential for bias by the interviewer and recommended a second rater complete an additional rating. This advice was followed with all nine interviews rated by both the researcher and the certified LoU rater. For the nine interviews rated, the inter-rater agreement was  $r = .75$  when correlating the raters results for the overall level of use category. Raters agreed on 89% of the overall levels of use designations. Disagreements were resolved through consultation. Ratings referenced when reporting findings were assigned by the certified rater.

The LoU interview has one main objective, to gather enough information from the interviewee about personal use of an innovation to assign a level of use. This is accomplished by two independent actions. Initially, each teacher was asked questions, "Decision Points" (see Table 15), regarding her overall use of teacher action research. This was followed with questions designed to probe the teacher's level of use in each of

the categories in order to contribute to the richness of data that supported the overall use designation. Probing the levels of use in each of the categories -- knowledge, acquiring information, assessing, sharing, planning, status reporting and performance -- enabled the interviewer to determine interventions that the building or district administration could consider providing each teacher and their teacher team in order to support their implementation of teacher action research in the classroom.

Teachers were observed in their weekly study team meetings, a time allocated for review of their team and individual efforts with teacher action research. Data collected from these observations was reviewed both separately and in conjunction with each teacher's overall level of use of teacher action research along with their independent level of use in each of the seven categories as designated by analysis of their responses to the LoU interview.

An Innovation Configuration (IC) Map was designed and used by the researcher to help determine if the principles of teacher action research were practiced in the team meetings of the teachers involved. The purpose of this IC Map was to present a picture using words that described the different ways of doing the innovation. The innovation configuration map detailed the following attributes of the design and implementation of the teacher action research plans: (a) research question was focused on student learning; (b) research information was reviewed; (c) data collection was aligned with actions taken; (d) decisions were data-driven; (e) teachers worked collaboratively in implementation of plan; and (f) goals were results-oriented.

Table 15

*Overall Levels of Use Decision Points for Teacher Action Research*

Levels of Use	Behavioral Definitions of Use
0 Nonuse	Has little or no knowledge of teacher action research
I Orientation	Acquires information about teacher action research
II Preparation	Prepares for initial use of teacher action research
III Mechanical Use	Focuses on user of teacher action research versus the student, i.e., primarily concerned with steps to follow
IVA Routine Use	Stabilizes use of teacher action research with little thought given to improving implementation process or its consequences
IVB Refinement Use	Varies use of teacher action research to increase impact on the students and their achievement
V Integration Use	Combines own use of teacher action research with colleagues' activities to collectively impact students' achievement
VI Renewal	Reevaluates quality of teacher action research use and seeks major modifications to current implementation process, investigates alternatives to process and explores new goals for self and colleagues.

*Note.* From Measuring levels of use of the innovation: A manual for trainers, interviewers and raters by S. Loucks, B. Newlove, and G. Hall (1975), copyright 1998 by Southwest Educational Development Laboratory.

A major reason that widespread change often occurs only modestly across a school is that the implementers, change facilitators, and policy makers do not fully understand what the change is or what it will look like when it is implemented in the

envisioned way” (Hall & Hord, 2001). The IC Map provided a descriptive guide for how teacher action research would look when implemented by classroom teachers.

Observations using the IC Map allowed the researcher to measure behavior that the participant may or may not have reported in focused interviews.

In addition to the Levels of Use interview and the IC Map, documents that included teacher, building-level, and district-level artifacts were reviewed for their contribution to this study. Artifacts included study team logs, action research plans, student achievement results, and each teacher’s self-evaluation of her use of classroom action research using the IC Map.

### *Data Analysis*

The information from the LoU focused interview and the IC Map was combined with the documentation of teacher and district artifacts over the duration of this study to form a descriptive narrative of the case study. Tapes were made of all interviews and transcripts were prepared. The narrative transcripts were analyzed for emergent themes throughout the process of the study. Participants’ comments were copied into a database along with identifying information and key terms. This database was sorted on the basis of themes. The themes were identified using the constant comparative method of data analysis to help support theory regarding the teachers’ perception of the impact of action research on their teaching practices, perception of student achievement, and implementation of the new innovation.

The major data-gathering technique used in this case study was participant observation. In addition, formal and informal interviews and the review of documents supplemented observations (Bogdan & Biklen, 2003). The focused



interview ensured participants were encouraged to share true-to-life responses as opposed to a highly structured interview that requires standardized questions. A focused interview includes probes and procedures that are used to elicit the necessary information on the impact of action research on the teachers' practices.

We are reminded (Loucks et al., 1998) that less structured interviews allow for standardization of meaning rather than relying on the same words to mean the same thing to each interviewee. Each individual . . . responds differently in extent, as well as content, and . . . follow-up to responses must be individualized.

The IC Map made it possible to characterize the different parts or components of the action research innovation. The IC Map provided a record of what teachers were actually doing, and provided clues as to how future professional development activities might be designed to address teachers' needs. Hall and Hord (2001) wrote the following regarding the intended use of an IC Map:

The purpose of the IC Map was not to make judgments about how good or bad it may be to adapt an innovation. Instead, the goal was to point out: (a) that in most change efforts, innovation adaptation will occur; (b) that there is a way to chart these adaptations; and, (c) that these adaptations have direct and indirect implications for facilitating and assessing change processes. (p. 39)

The researcher plotted the relationship between teachers being at certain Levels of Use and the IC Map configuration results. Regarding this type of correlation, Hall and Hord (2001) wrote the following:

The “*a* and *b* variations on the IC Map are observed only in classrooms where teachers are at higher Levels of Use. . . . These data also indicate that educational innovations are much more complex and subtle than our critics and we admit.” (p. 220)

Lastly, the document analysis of artifacts, in particular the teachers’ action research logs and goal-setting artifacts, showed how the teachers characterize action research at the classroom level. These artifacts displayed the iterations a teacher follows from the initial step of posing a question, through the stages of writing a targeted classroom based student achievement goal, identifying information needed, collecting that data, and making decisions based upon analysis of those data.

### *Protection of Participant Rights*

In accordance with university policy, the University’s Instructional Review Board reviewed and approved the methodology of this study. Participation in the study was voluntary and confidentiality assured. There was no direct student participation in this study. The gatekeepers of the school district were asked for permission to conduct the project in their district. Participants were asked to take part in the study and were given a written agreement that assured them results would be confidential and that no information would be disseminated that identified individuals without the expressed written consent of their administration and the individual participant(s).

### *Summary*

In this chapter, the qualitative research design of an observational case study was outlined. A summary of data collection methods detailed the plans for fieldwork

observations, artifacts collection procedures, and interview processes. In addition, the demographics of the district, school, and participants of this research study were shared.

## Chapter 4

### FINDINGS

The purpose of this observational case study was to review the practices of two elementary teacher teams of one school as they used the action research process in their classrooms. Participants shared their perceived changes in teaching practices and students' learning. They also reflected on the characteristics of the implementation of action research in their classrooms as a result of their participation in an action research professional development program.

This study revealed attributes of the action research professional development program the teachers believed had enhanced both their personal learning and also their classroom applications. It also identified the characteristics of a teacher researcher that a facilitator of an action research professional development program can anticipate when leading the design, implementation, and evaluation of such a program.

This chapter presents findings related to the three research questions identified in Chapter One:

1. How do teachers describe the changes, if any, in their teaching practices as related to their participation in the action research process?
2. How do teachers describe the changes, if any, in students' learning as related to their participation in the action research process?
3. How do teachers characterize their implementation of action research?

Findings related to each question are addressed in separate sections in this chapter entitled "Changes in Teaching Practices," "Changes in Students' Learning," and "Characterizations of Implementation Practices." The data were triangulated by means of

document review, on-site interviews, and teacher team observations that were complemented by use of an innovation configuration map. All results are presented through tables and discussion in answer to the research questions of this study.

A synopsis of the nine elementary participants' educational backgrounds and involvement in their school and district is depicted in Table 16.

Table 16

*Participants' Educational Characteristics*

Grade	Experience	Highest degree	Leadership activities
Second	7	BA	Member of pilot DIBELS team Classroom supervisor of student teacher(s)
Second	3	MS in Early Childhood	6 Traits Trainer for grade level staff Team facilitator for grade level Social committee
Second	10	BA+15	Chair for building assistance team Looping pilot
Second	11	MS in Early Childhood	Co-chair for building assistance team Math & Language Arts committees Comprehensive School Improvement Planning (CSIP) committee Literacy trainer for grade level Trainer for Year 1 teachers Special Education planning committee Developed K-2 Collaborative Model
Third	16	BA+15	Chair for building assistance team Building improvement team Reading incentive committee Perk committee Interview team

Table 16 (*continued*)

Grade	Experience	Highest degree	Leadership activities
Third	15	MS+30	Reading/Language Arts representative Literacy trainer for grade level staff
Third	8	MS	6 Traits trainer for grade level staff Co-chair for building assistance team
Third	16	MS+30	Building assistance team member ESL coordinator for district
Third	8	MS	Building assistance team member Head teacher union negotiator Building teachers' union representative Social studies curriculum representative Mentor and student teacher supervisor Parent/Teacher Conference committee Social committee chair Reading incentive committee

*Question One: Changes in Teaching Practices*

How do teachers describe the changes, if any, in their teaching practices as related to their participation in the action research process?

The LoU data analyses identified changed teaching practices by revealing the use behaviors of the participants in the seven discrete Levels of Use (LoU) categories: knowledge, acquiring information, sharing, assessing, planning, status reporting, and performing. Questions for these categories were independent of one another and provided separate pieces of evidence that were useful in reporting the findings of this study and in the development of an overall picture of the user's behavior and interaction with teacher action research.

To ensure the question of change in teaching practices as a reflection of an individual's use of teacher action research was saturated, each teacher was also asked to describe the changes, if any, in their teaching practices as related to their participation in the action research process. One noteworthy observation to be considered in this analyses was that the teachers were implementing an innovation bundle, meaning they had been trained in writing a SMART (strategic, measurable, attainable, results-oriented, time-bound) goal with the expectation that they would use action research in their classrooms to follow students' achievement of that goal.

A coding system was developed to organize the descriptive data collected from this direct question, the study team observations, and the LoU interview responses. Coded categories included perspectives held by the teachers regarding their refinement of teaching practices as a result of teacher action research. Triangulation of data identified the following three themes of changed behaviors in teaching practices: (a) more deliberate with teaching; (b) better-informed consumers of educational research; and (c) improved communicators.

#### *Deliberate Practitioners*

The action research cycle can be described using words like methodical, planned, and reflective, with 'deliberate' the word heard most frequently throughout conversations and interviews with these teachers. Teachers reflected on their professional growth with the action research process and prided themselves in having reached this stage of deliberateness. Dialogue about teaching practices and students' needs and achievements were part of their daily conversations and allowed them to ponder and make decisions carefully.

I think every year I get better at action research. It helps me to be more deliberate . . . how I'm going to write my plans and how I'm going to deliver them to the class. . . you know exactly what you want them to reach and you know what point they need to reach. . . . I'm thinking this is what I need to do and I'm going through the goal layout. It's just something that's internalized.

After using action research for two years, these teachers were beginning to experience the benefits of their invested time and effort. Their perseverance was paying off in their daily work with their students. Teachers were able to describe earlier experiences with action research and how their action research practices were becoming easier due to these experiences. Changes in teachers' perceptions had occurred as each one personalized the process to meet her needs and those of her students. One teacher shared, "I think we made it a little too difficult when we didn't need to....We have become more familiar with action research, it's teacher-friendly....not like this is an extra task that we have to do."

All participants described changes in their teaching practices as a result of their use of action research in their classrooms; however, responses to interview questions revealed varying degrees of change (see Table 17). Their enthusiasm and willingness to share both the perceived and concrete results of action research was genuine and supported by this second grade teacher's description of her team's feelings about the current action research plan, "It's the first time we're all really excited about it and we know that it's going to show a lot of growth!"



Seventy-eight percent of the teachers were at the mechanical use level, mainly due to the limited time of two years that the district had included action research as a core expectation of their professional development program.

Table 17

*Teachers' Perceptions of Changed Teaching Practices*

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Teaching Practices

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- I am more deliberate. I target students.
  - I am more overtly aware of data and how to analyze data.
  - I see myself doing a better job with the day-to-day classroom routine.
  - I have more of a repertoire of strategies.
  - I am better at differentiating instruction.
  - I do direct instruction.
- 

*Note.* Teacher responses when asked perception of changed teaching practices.

Level of Use research finds most individuals reach the mechanical use level after using an innovation for three years, so it was noteworthy that seven of these teachers had reached this overall level in only two years (see Table 18). Remarkably, two teachers had moved beyond mechanical use with one teacher at the routine level and the other at the level of refinement. At these levels the focus was diverted from the teacher and the spotlight was on the students and the impact action research had on their educational opportunities.

Teachers at the mechanical use level shared comments that focused on their relationship with the teacher team. A sense of accountability to the group appealed to one teacher, "I think a change is being held accountable. . . . and being pushed in a great

way. . . realizing what I'm doing is not only for me, in my classroom, but it's for the whole grade level, for the whole school."

Table 18

*Overall Level of Use of Action Research Practices*

Teacher	Grade	Years of Use	Overall LoU
1	2	2	Mechanical
2	2	2	Refinement
3	2	2	Mechanical
4	2	2	Mechanical
5	3	2	Mechanical
6	3	2	Mechanical
7	3	2	Mechanical
8	3	2	Mechanical
9	3	2	Routine

*Note.* Typically innovation users are at the mechanical use level after three years of use.

In a positive context, the word 'pushed' was used again by a second teacher to describe her changed practices as a result of using action research. She related, "Action research just pushes you to make sure that you really evaluate yourself and see if you are doing what's best for the kids. It really makes you think. . . . You know that it's good for you to do."

Another shared how she uses a critical eye when reviewing possible academic areas to focus on for her action research. She preferred ways in which achievement could be easily measured and reported. "I search out things that are more measurable now. . . .

I think this has opened my eyes to there are some things you can show very easily and some things that are very difficult.”

The teacher at the routine overall level reported her team had recently revised their use of action research and she was pleased with the results, “Last year we felt action research had to be whole class. Now we understand we can write a goal for small groups of students . . . . we need to analyze data, see what kids need to . . . . help them achieve.”

Trying to increase the impact of action research on her students, a teacher at the refinement level shared the following changes in her teaching practices:

I go back to being deliberate – not just trying some strategy and hoping that it works. I look at anecdotal records. . . I have a baseline and I’m monitoring that and I’m knowing exactly if it’s working. . . . If it’s not working maybe it’s not the strategy – maybe it’s my delivery. It’s knowing I need to go back and research and see what I’m doing wrong or what I need to add.

Her interview responses reflected an understanding of how her personal use of action research contributed to improved student learning, “You are following data along and you’re realizing this doesn’t work, so you need to change.”

When asked how teacher action research has changed her teaching, she stated that her buzzword was deliberate, “I am more deliberate. . . . you’re just very deliberate when looking at research. You ask, ‘Does this do exactly what I want it to do?’”

Teachers were methodical in meeting the needs of their students, a product of their two years of practice in using action research in their classrooms. This systematic approach in applying the steps of the action research cycle in the development of their research plan was practiced by both teacher teams.

As teaching practices changed, the professional commitment of the teachers to their students was heard loud and clear. Teachers never commented that their students were incapable of learning, rather each teacher reflected on her own practices and how those might be changed to better address the instructional needs of the individual child. The importance of self-reflection when undertaking a change in practice was stressed, “I evaluate myself a lot more than what I used to. I really evaluate myself and see if I am doing what is best for the kids.”

These teachers were no different than their students when faced with learning a new concept and skills. Change takes time, support, and patience on the part of all parties concerned. The support of the administrator and teacher team could not be underestimated, especially by the teacher who shared, “I try new things . . . take risks . . . step out of my box and my comfort level and try new things!”

The range of understandings of action research and how that range was described in the teachers’ personal reflections was similar to the range of understandings one finds in a classroom of elementary students working with a new concept. With differentiated support from the district and from their colleagues, these teachers were demonstrating movement along the continuum of mechanical use of classroom action research to that of routine or refinement.

One teacher summed up her personal growth with the action research practice as follows:

Before this year, action research and goal writing was just hard for me to put together and write down. This year, writing our goals and figuring out the

measurable part all just came together for me. It made more sense . . . . I guess it comes with practice; the more times you do it, the easier it is to understand.

This level of deliberateness came with time and practice. Teachers were internalizing the process of action research and as this practice was becoming a daily routine, teachers and students alike were the beneficiaries. ‘Slow and steady wins the race’ could well be the mantra of these teacher action researchers.

### *Informed Consumers of Research-Based Practices*

Change was ever-present as these teachers described their experiences with action research. From district office to the classroom, educators had added a new dimension to their work with students. Conducting research became more the norm than the exception.

Just how would they help their students achieve these results-oriented goals? Through words and actions these teachers answered this question and their practice of informed consumerism was evidenced (see Table 19). Teachers reviewed research-based instructional strategies for their students’ identified deficit areas and brought back to their teams what they had learned. As informed consumers of research, the teachers matched the appropriate instructional strategies to their students’ needs and implementation of the action plan began.

At a fall facilitators’ meeting the agenda required all present to share their grade level’s action research plans. The dialogue that took place at this meeting included an overview of each team’s action research efforts and their commitments to their students. As each facilitator shared her team’s action research plan, the inclusion of the SMART

Table 19

*Informed Consumers of Research*

## Impact of consumer awareness on changed teaching practices

- 
- “I am a very avid reader; very much into research and what’s best for kids.”
  - “I search out things that are more measurable so that . . . I have some black and white to show.”
  - “Action research helps you do a little bit more research to try to find other ways to teach rather than the traditional ways.”
  - “I feel more confident as a teacher if I’m using something I know has been proven to work. . . . You aren’t reinventing the wheel.”
  - “Parents trust you more if they know that you’re doing something that’s research-based.”
- 

goal clarified the intent of the plan. The facilitator of the second grade team reported:

Our goal is to increase reading fluency. We used the DIBELS assessment (Good & Kaminski, 2002) oral reading fluency test to measure achievement and get our baseline information. Students must read 40 words per minute to be considered fluent at the end of first grade. We will use reader’s theater as our intervention. Research says this should be a 10-week intervention in order to show successful achievement. To determine achievement results, we’ll use running records and a four-section reader’s theater rubric and the DIBELS winter scores.

With two years of practice to support their efforts, these teachers clearly demonstrated their preparedness in writing their research plans, and their skill in writing clear, targeted goals that provided the framework for that written plan. Sharing grade level action research plans with colleagues at the monthly facilitators’ meetings was an

expectation. This not only kept all participants accountable for the implementation of their action research plan, but it also allowed the staff to be better informed of the efforts of their building level colleagues and encouraged dialogue and assistance between grade levels.

Schmoker (2001b) reminds us that a close look at school systems implementing action research reveals the simplicity of school improvement efforts built around an overlooked and most potent force in improvement: collective, organized teacher intelligence. Not only was this statement supported with the preceding report of the second grade teacher, but it was reinforced once more at this same fall facilitators' meeting when the third grade team leader shared her grade level's action research plan:

We have 62 students in our target group. We will work with basic math facts, with the goal of these students earning 98% accuracy on addition facts by December. We are integrating parent and school efforts. Two nights of the week are designated as Fact Night and parents are to work with their child using flashcards that we have sent home with the kids. Technology is also being used.

These grade level reports revealed information the teachers felt integral to their implementation of action research plans: (a) data analysis of student achievement; (b) determination of a cut score when writing a goal; (c) knowledge of scientifically based research related to the goal; and (d) technology integration not only for the students which was clearly stated, but also for the teachers' data analyses tasks and reports.

As a unified group, their focus was on improved student achievement and how teacher action research would better provide an instructional program targeted to meet the needs of their students. Their skills as consumers of educational research were enhanced

with technology and the opportunity to search databases of educational research. They were students themselves as they continued to grow professionally with the design and implementation of each action research plan.

### *Communicators*

Communications kept individuals external to the implementation site, such as other teachers' teams within the building and in other elementary schools within the district, and also students' parents informed about what was happening. In order to gain the support of those individuals external to the implementation site, participants needed to share information on their action research plan. Hall and Hord (2001) write that communicating externally is an important but often-neglected set of interventions that should be taken to keep individuals and groups external to the implementation site informed.

Participants described several examples of the positive effects of external communications related to the successful implementation of their action research plans. For example, the second grade team included parents, district technology and reading support staff, intermediate agency consultants, and graduate school classmates as intervention supports in their action research plans.

A second grade teacher explained, "One thing I'm doing more in my classroom is really utilizing my parent volunteers more for the goal area." She asked parents to help prepare learning games or activities for her centers so that she could use her time to focus on the management of progress monitoring tasks.

Another second grade teacher shared that the team typed a note on reader's theater and sent it home so parents would know that scripts would be coming home



during the semester and their child would need to practice reading his or her lines at home. Included in this note was an explanation of oral reading fluency research that supported the practice of reader's theater. This helped to better inform the parents of classroom activities.

The third grade action research plan included a parent component, Fact Night. At the onset of the action research plan, teachers informed students and their parents of the grade level goal. "We really communicated with parents. We had a lot of positive feedback from parents about targeting this one area."

"We shared the focus area with parents," another third grade teacher said, and she further explained, "We sent a note home that stated to parents where their child was at on the fact test and let them know our goal for all third graders was 98% proficiency or above on their weekly addition math facts timed test."

At the November parent conferences, the third grade classroom teachers once again shared the goal. Each child and parent then mutually set a math goal for the child and created a bar graph that showed where the child was currently achieving and the end-point goal for the date the action research plan was scheduled to conclude. Parents were informed weekly of their child's progress toward meeting this goal.

A third grade teacher explained, "I set the graphs out at conferences and share with the parent, 'This is where we'd like your child to be; this is where your child is working right now.' They see a discrepancy and that really tells parents we need to work together."

She also shared that some children do not have parental support at home to work on their goal. To counteract this inequity amongst the students, she communicated

internally with other staff that a few of her students needed one-on-one assistance during the school day. This communication resulted in the recruitment of ‘buddies’ from the fifth grade that helped those students with math activities such as flashcards and games focused on addition math facts.

Successful interventions take time and thought. As a result of their studies with the Concerns-Based Adoption Model, Hall and Hord (2001) recommend external communication be considered, classified, and assessed as a component of an action plan for change. Participants in this study shared that communications promoted a more collaborative culture, helped focus efforts, and provided greater opportunity to share the vision of a student’s learning with the children and their parents.

### *Question Two: Changes in Students’ Learning*

How do teachers describe the changes, if any, in students’ learning as related to their participation in the action research process?

An analyses of the following documents contributed to the described changes in students’ learning: (a) teacher artifacts, such as team logs and completed action research forms for the administration; (b) transcripts of teachers’ focused interviews using the Measuring of Levels of Use instrument; and (c) fieldwork observations of study team meetings, professional development sessions, and classroom visits. The following two themes: (a) goal-directed learning, and (b) improved student learning emerged from the data reviewed.

#### *Goal-Directed Learning*

Prior to beginning the weekly teacher team observations, the researcher attended an August pre-school workshop session, during which time all teachers in the building

were given a packet of their new students' achievement data collected from the previous year. Included in this packet were data collection forms designed to assist the teachers as they prepared their team's data documents to review in developing their fall action research plans. Data collection forms were specific to the assessments given at each grade level. For example, the K-3 teachers reviewed: (a) the previous spring's DIBELS individual achievement results report; (b) students' running records results that revealed both oral reading fluency and comprehension achievement; and (c) individual records of word recognition of reading vocabulary words.

Focus on student learning was a standing item on the agenda of the monthly building-wide meetings facilitated and organized by the principal. This agenda item included all staff as leaders of an academic presentation at some point during the year. These monthly building-wide meetings served multiple purposes. Academics were featured as one team shared an update on their action research plan, 'nuts and bolts' items were reviewed, and celebratory events on student learning and staff experiences were highlighted.

Each grade level elected a team member to represent them on the building facilitators' committee. The team facilitator served as the liaison between the principal and the staff for the dissemination of weekly information termed 'nuts and bolts,' but their primary responsibility was to lead their team through the action research process.

From August through mid-October, the facilitators and teacher teams of second and third grade were observed throughout their implementation of the action research process. They reviewed student achievement data from the previous school year along with their current fall assessments to determine a focus for the first semester action

research plan. Once the focus was determined, teachers continued the action research cycle.

This process took time. At the August data day teachers didn't necessarily know their students, but worked on plans as they reviewed achievement data on students' academic performances in previous years. Once the students entered each teacher's classroom they were individuals with personal stories that contributed to their achievement results and some needed a differentiated curriculum that could be supported through the instructional interventions of the team's action research plans.

In late October, the principal led a meeting of all team facilitators with one agenda item, communication of team action research plans for fall semester. See Table 20 for the results-oriented goals, oral reading fluency for second grade and computation fluency for third, and the anticipated end achievement results for students at both grades.

Table 20

*Achievement Goals and Results*

Goals	Achievement results
Oral reading fluency, second grade: Increase reading fluency of students identified at risk or some risk on DIBELS assessment.	The facilitator shared the following report: - Six students advanced from "at risk" status to 'some risk.' - Nine students advanced from "some risk" status to "low risk." - Five students remained as "at risk" but did improve from 6 to 20 wpm.
Math computation fluency, third grade: By December 10, 49 of the 62 students in our target group will score 98% or above on the five minute timed test.	On December 10, 46 of the 62 students in the target group had attained 98% or above proficiency on the five minute timed test.

The motivation of the teachers to provide a quality program for their students was evidenced in the practices and the team goals just described. The teachers perceived the implementation of the action research plan contributed to the students' intrinsic motivation to be goal-directed. In their interviews, teachers shared their perception of changes in students' learning (see Table 21).

Table 21

*Teachers' Perceptions of Changed Student Learning*

Student Learning
<ul style="list-style-type: none"> <li>▪ "Students see gains and work toward goals."</li> <li>▪ Students are excited about learning, they want to succeed, and they're doing it for themselves.</li> <li>▪ Students are motivated, set own goals, and want to reach goals</li> <li>▪ "They are more confident in what they're doing because they see their gains and they're excited because they're working toward a goal"</li> <li>▪ (The students) are getting more help . . . . we help them in a positive way."</li> <li>▪ "Definitely self-reflective. . . . they are aware and motivated."</li> <li>▪ "They've experienced growth and less frustration because of action research."</li> </ul>

*Note.* Teacher responses when directly asked perception of changed student learning.

With the oral reading fluency plan, teachers allowed the students to select the reader's theater scripts they would use each week. The students were selecting scripts with an instructional or independent reading level appropriate to their skills. One teacher reflected on this free-choice option and noted, "They are becoming more independent because I'm giving them the independence to try new things. It has caused me to realize

they can do some things on their own. Their problem solving skills and their creativity is amazing.”

A comment from a third grade teacher represented the feelings of several teachers, “Students are confident in what they’re doing because they see their gains. They are excited because they’re working toward a goal. If students have a monitored goal, they’re proud of that. It gives them a sense of ownership.”

Another shared the students’ excitement in her classroom each Friday when she had set out the weekly results on their individual five-minute addition tests, “They flip through graded papers to find out if they did pass or how many more they got correct. I haven’t had tears of disappointment. We ask that they do whatever they are capable of doing.”

When describing feedback from students as a result of their participation in the math action research plan, this personal experience was shared:

I have a little boy who’s a behavior challenge. I mentioned to him, “I really want you to pass this test; you know you can do this.” The week before he had 66 correct, the highest he’d ever gotten. When we took the timed test last Friday he was just crushed. He had gotten an 85! He has never really cared before and now he really seemed to care.

Another teacher agreed. She felt her attitude toward their math goal plan influenced that of her students, “The way I approached the SMART goal and research plan has been positive and now it’s within the students, they’re not doing it for me, they’re doing it for themselves.”

These teachers perceived a sense of self-accomplishment a great motivator for the students. Informing the students of their individual achievement goals, and allowing them to track their personal progress, provided the students with the personal ownership and incentive to improve their skills. As a learning community, teachers and students alike demonstrated a goal-directed focus toward their fluency skills in oral reading and mathematics computation.

### *Improved Student Learning*

A second theme, improved student learning, characterized teachers' perceived student change in learning due to the action research process. Teachers unanimously acknowledged that the benefits for the children were prime personal motivators for conducting action research. One teacher shared:

I'm deliberate in my teaching which results in the students having meaningful conversations. When you focus on skills . . . for five or ten minutes of practicing daily, it is showing growth and that helps remind me that every single minute in my classroom needs to be filled with things that I know will affect their goal.

When the researcher observed actual implementation of the second grade action research plan with the students in the classroom, the plan came "to life before her eyes." The students met with the teacher at the front of the classroom and as a group they reviewed the skill of expression that they were working on that week with their reader's theater scripts. The teacher had written on chart paper the following reminders:

- Look at print: italics, bold
- Use expression in your voice when acting like your character

- Show expression on your face
- Punctuation:   ! – How does your voice sound?  
                             . – It's time to take a breath.  
                             ? – You are asking a question.

The children did a shared reading using a poem on chart paper selected specifically for the students to practice the above skills using expression. The teacher conducted a quick group survey of the students' opinion of the oral reading fluency strategy intervention, reader's theater. She asked them to give a thumbs-up or thumbs-down to note their interest in reader's theater. Results were an 80/20 split with the majority thinking reader's theater was fun.

Following this mini-lesson and survey, the students met in their reader's theater groups, highlighted and read their character's part, and applied the expression skills learned that morning in their oral reading practice. The students were actively involved in their lesson and lots of expression was heard throughout their practiced readings.

At the conclusion of the 10-week action research plan, a lesson of which was featured above, students were assessed individually using the DIBELS oral reading fluency subtest. Fifteen of the targeted 20 students demonstrated improved fluency skills.

In mid-December, the third grade team met to report student learning results to see if their students had achieved the results-oriented goal of their action plan. Results showed they were only three students shy of meeting the goal. After a brief moment of silence, their outward signs of disappointment faded as the facilitator reminded them of the multiple successes their individual student's results revealed.



This prompted one teacher to say, “Yes! Look at my two students who didn’t reach the end target but showed so much growth! One increased his computation fluency from 24 problems correct to 94 correct, and the other increased from 43 correct to 92 correct!”

A teammate added, “Achieving in the 90s is fantastic!”

Within five minutes of noting their students’ achievement on the first semester goal, their conversation turned to immediate and short-range planning for the next action research plan they knew based on previous data analyses would be based on oral reading fluency. The actions and dialogue that follow demonstrated the positive attitude of a team that thinks like action researchers:

Regarding the development of a results-oriented goal, the teachers shared their preference for a goal focused on individual achievements, “If we use the results of the winter oral reading fluency DIBELS assessment as a baseline in setting our next goal, let’s have the goal based on student growth versus the same standard for all students to achieve.”

“We each need to pick out our target group,” reminded another.

“What is our cutoff? Should we look at fifty –no look at 75?” asked another who had previously shared concern about the precise wording of the team’s next results-oriented goal.

Noting research in instructional strategies should begin, one teacher shared, “We got an article that came from the media specialist that says research supports instruction in reading phrases.”

The bell announced the official start of the school day for the students but the constraints of time didn't stop the flow of conversation. As the hallways fill with their excited voices, the facilitator closed with an assignment, "We need to do the following before we meet next Wednesday: (a) list target group kids at 75 or below on the DIBELS oral reading fluency probes; (b) give more than one test so we can compare results; determine what test that might be; and (c) list ideas for reading fluency strategies."

This teacher dialogue not only demonstrated the interactive nature of the team level meetings, but also showed how quickly the teachers transitioned from the closure of one plan to the developmental stage of a new action research plan. The opinion of each teacher was valued and considered. They had experienced firsthand the positive effects of action research on improved student learning as a result of previously implemented plans and they were determined that their next plan would be just as great for their students, if not better.

### *Question Three: Characterizations of Implementation Practices*

How do teachers characterize their implementation of action research?

To answer this question, the researcher analyzed the following: (a) focused interview responses to the Measuring Levels of Use (LoU) of the Innovation instrument, in particular the categories of planning and performing; (b) observational data collected from weekly team meetings; and (c) innovation configuration maps completed by each participant and also the observer on attributes that described their team's action research implementation practices.

Themes that developed from these data included: (a) perception of self as an action researcher; (b) core practices; (c) contextual constraints; and (d) support structures.

When reviewing interview responses it was apparent that the district's two innovation bundles, SMART goals and teacher action research, resulted in several interviewee's indecisiveness. Often teachers' responded first by sharing their SMART goal efforts and they would need redirected to include the bigger picture of teacher action research.

To ensure the data analyzed reflected the teachers' views of action research, the researcher teased apart responses so that this research question was appropriately addressed. The researcher also asked each teacher to define teacher action research. Their definitions ensured all participants understood and agreed upon the definition of action research. This task enabled the researcher to align each teacher's definition of action research to the stages of Sagor's (2000) action research cycle (see Table 22).

Table 22

*Participants' Defined Attributes of Teacher Action Research Compared to Sagor's Model*

Teacher cited attributes	Sagor's research cycle
Group of teachers identifies an area of (student) need. (6)	Select a focus
Needs of our students are identified. (5)	Clarify theories
Questions are raised after looking at achievement data and need is determined. (5)	Identify research questions
Goals are written and targeted to improved student achievement. (5)	Implied in Sagor's cycle
Instructional strategies are evaluated for effectiveness at conclusion of action plan. (6)	Report results

Table 22 (*continued*)

Teacher cited attributes	Sagor's research cycle
Research is reviewed. (5)	Take informed action
Write an action research plan that includes research-based instructional strategies. (6)	Take informed action
Data is collected and reviewed. (5)	Collect data
Reassess to see if progress was made. (3)	Analyze data
If goal isn't reached, try another approach. (2)	Report results

*Note.* The number of times a description was given is noted in parentheses.

With clarification of each teacher's definition of teacher action research, the understanding of this concept among the nine participants was judged complementary of one another. Having determined that all participants in this study clearly understood the practice of teacher action research, that is, the SMART goal was but *one* component of the action research cycle, collected data could be analyzed with confidence.

The following teacher's definition of action research was representative of those of her colleagues:

In teacher research a teacher identifies an area of need based on information from assessment data. The teacher writes a goal based on students' actions, for example, students will increase accuracy of nonsense words....If students do not reach the goal the teacher tries another approach to developing the skill.

*Profile of a Teacher Action Researcher*

Group planning took place at the weekly team meetings observed by the researcher. Both teams had established routines to ensure they stayed on task and addressed all topics on the agenda. If a team needed more time to discuss a topic, they revisited the topic over the combined lunch and recess period, an additional guaranteed daily block of 25 minutes that provided each teacher team the opportunity to dialogue and build collegial relationships outside of the weekly structured meeting setting.

The depth of a teacher's involvement in their individual action research practices was apparent in the conversations that took place at the team level. The observer made written observations of these meetings, recording bits of conversations and later reviewing for the frequency and depth of the interactions among team members, and also making note of the sequence of teachers' decisions and actions throughout the implementation phase of each team's action research plan.

*Planning.* Responses to the LoU instrument revealed all teachers at the mechanical level of use in the category of planning, a level that finds the teacher focused on the design of short-range steps taken during implementation of action research plan.

There was a wide range of planning skills demonstrated by the teachers even though they were all rated at the mechanical use level. One teacher at the entry level of mechanical use was able to identify the steps entailed in implementing action research in her classroom; however, she was dependent on her team members for that push to move forward. Teachers in the mid-range of mechanical use had a short-term perspective when planning and they reported that logistics and time were the focus of most personal efforts in using action research. Those teachers nearing the routine and refinement levels were

frequently planning for the immediate and long-range use of action research. The needs of the students were the primary foci for these teachers versus concern about personal needs.

Analyses of the individual interview questions for the planning and performing implementation categories complemented notes of the team observation periods. Both data point sources revealed teacher teams were comfortable in their working relationships and fully aware of their action research skills as both a team member and an individual.

The collaborative action research format of these two teams provided a safety net for those teachers whose primary focus was on their personal needs as users of action research, and their secondary focus was on their students' needs at this time. This observation was not intended as critical of those teachers at the mechanical level of use, but rather served as a reminder that research suggests that on the average it takes three years of practice with a new innovation before a user is typically identified at the mechanical level of use. Action researcher profiles of the teachers on these two teams were exemplary, especially when taken into account they were in year two of implementation.

Even though the two groups of teachers developed their action research plans as teams, review of individual responses for the planning category questions revealed variance in their application of individual planning practices related to teacher action research. Four teachers were focused on the organization and management of instructional resources and the activities related to the use of action research in their classrooms. Their responses revealed their planning was for the short-term and logistical

issues were important to them. Comments were focused on lack of time, difficulties in management of the plan, and scheduling challenges.

Three teachers dwelled on the procedural aspects of planning action research, yet they did mention its positive effects for their students. One wanted to “make sure that the goal was something that’s best for the kids, that you know they need to work on . . . something that’s reasonable for you to do in your everyday schedule.” The predominant theme of their messages concerned themselves and their roles as users of action research but they were beginning to consider the students first as they planned.

These teachers were engrossed with day-to-day implementation plans and needed additional encouragement to ‘look down the road’ to anticipate how their plans of today might impact their students’ achievement not only for this one intervention but for future planning purposes. The management and paperwork of an action research plan concerned them; they wanted to make sure they had time to work with the students versus tying up their instructional time with the data management of progress monitored information. One teacher observed, “A weakness of action research is probably the paperwork . . . . A plan should be manageable.”

When asked if she was currently looking for information about the focus of the action research plan, she stated, “I’m not purposefully going out and getting materials or books about specific strategies, but by accident, I think, whenever we read something we bring it back to the team.” This practice of accidental finding, while not an exemplary attribute of an action researcher, showed the honesty of the teacher and her words are revisited in the summary on contextual constraints.

Based on their interview responses, one-third of the teachers had several ideas for future plans and wanted to incorporate what worked well with the current plan into their next action research project. One self-assessed, "I think we have to keep good parent contact in our next plan. We also have to continue to let children know how they're doing and how to be motivated and self-reflective without pressuring them."

Her belief that parents and students be included in future plans was reinforced by her colleague who advised, "I think one of the important people we called on was parents, encouraging that this is a thing they can do to support at home. . . . These were the big parts of our plan: incorporating technology, communicating with parents, and having students be aware of where they're at and where they need to move forward."

*Performing.* In education, a significant amount of time is spent outside the classroom as teachers acquire information, share ideas and plan. The performing category was unique in the LoU measurement as it measured actions relative to the use of action research that occurred in the classroom. All other categories measured the teachers' use of action research outside the specific moments of its delivery in the classroom.

All teachers recognized the significance of inclusion of action research in their classrooms due to its impact on student achievement, yet some failed to anticipate immediate consequences of implementation in the classroom. The logistics of time and management of resources impeded their progress, yet didn't cause them to quit their use of action research.

One cited having made changes in her use of action research in response to organizational and administrative focused requirements. She felt her use of action



research was improved due to her previous year's experience with the process. She also cited as helpful the revisions made by the district administrators in the forms teachers completed to note their results-oriented goal and action plan for improved student achievement. Emphasizing her appreciation to the administrators for listening to teachers' needs, she shared, "I know that district administrators want action research to be as comfortable as possible for us. . . . they've made it easier for us. . . . they've made it more teacher-friendly and . . . something that we can easily fill out."

Teachers at the refinement use level reported minimal management problems. They had determined the students' deficit area, allowing them to focus on the development of the action research goal and the accompanying plan. One teacher revealed the significance of team support in her performance in the classroom, "Every Wednesday we meet together for our study team goal. . . .so we talk about it pretty often, I would say. We're always going over and asking each other about scripts. . . . We are together so much that we do get done what needs to be done."

This teacher was focused on the achievement of her students and commented that her performance in the classroom was dependent on the needs of her students. Reading research was part of her professional life and she had come to the realization that specific instructional interventions would benefit certain students and certain skill needs. The significance of knowing her students and their instructional needs guided her as she and her team determined the academic focus for their action research.

She also talked of her use of teacher action research in her classroom, and explained the process she used as an individual on this team. She noted what she might change if upon conclusion of the research plan some students had not achieved the goal:

I read up on how to increase fluency. . . . When we find out this is where we started and this is where we ended, we ask, ‘Do we still have children who need help?’ I’ll go back to the fluency research and do another component.

Words of advice from the teacher at the routine level of performance included recommendations to “set up a time frame. . . celebrate your successes, look ahead to other district assessments, and document what you are doing in the classroom.”

In addition, “find a goal that is manageable, specific, and allows you to readily see progress.” Following their own advice, these teachers reported using classroom action research with minimal management problems and they anticipated continuing this implementation approach with their next targeted academic area.

The IC Map made it possible to characterize teacher’s use of some of the action research innovation components. The purpose of the IC map was to be self-evaluative and also provide the researcher with a comparison of what she observed and heard during weekly team meetings.

The researcher compared the relationship between teachers’ levels of use and their innovation configuration map results. Regarding this type of comparison, Hall and Hord (2001) wrote, “The “*a* and *b* variations on the IC Map are observed only in classrooms where teachers are at higher Levels of Use (IVB and higher). . . . Teachers at LoU III Mechanical Use tend to use more *c* and *d* configurations of the innovation” (p. 220). This comparison supported Hall and Hord’s findings (see Table 23).

Table 23

*Attributes of a Mechanical User on the Teacher Action Research IC map*

Component of action research	Attribute <i>c</i> of IC Map
Question	The research question is manageable and do-able within the time constraints of the researcher(s).
Information	Team members demonstrate ease in conducting research.
Collection	Teachers practice data collection techniques that have some detail and are manageable in terms of types and numbers.
Decisions	Team decisions are clearly supported by the data.
Collaboration	The teacher team uses action research to problem solve.
Goal Writing	Goals are results-oriented: specific, measurable, attainable, results-oriented and time-bound.

*Core Practices: Teamwork, Data Use, & Measurable Goals*

When asked to characterize the implementation of action research in their classrooms, the teachers cited the importance of three significant attributes of team-based teacher action research cited in research conducted by Schmoker (1999): teamwork, measurable goals, and data analysis. The teachers' identification of these same three critical attributes of a successfully implemented results-oriented action plan could not be overlooked.

*Teamwork.* Both teacher study groups practiced effective team collaboration, developed classroom academic goals, and used assessment data to improve overall district achievement. One common benefit of this teacher collaboration was the opportunity for teachers to consult with each other allowing them to work more efficiently. The teachers believed that working together in support teams allowed them to perform better than when they worked in isolation. They expressed that when working in isolation they might hesitate, feel uncomfortable, or lack confidence (see Table 24).

Table 24

*Teamwork Attributes*

Positive Attributes	Challenges
- "Open with each other, flexible, safe environment, never selfish, share."	- "... leadership skills affect dynamics of team."
- "Trust in and support for teammates"	- "... other members may not be willing or comfortable to share ideas."
- "... the respect we have in terms of ideas"	- Leader can be frustrated based on perception that other team members are dependent on her.
- "Nothing is ever shot down."	- "We are such good friends that we don't really stay on topic."
- "Team members are ready to provide help and contribute to team efforts."	- team temporarily deflated for not meeting SMART goal
- "Team relies on research to guide decisions; information acquired during this plan will be applied to action plan."	
- "We just balance each other; each of us is strong in one area."	

In particular, teachers shared that teaching is often an isolated activity with no opportunity to learn from colleagues. Collaboration allowed teachers to support one another's strengths and accommodate any weaknesses. Testing new ideas, methods, and

materials as a team provided the teachers with a pool of research-based instructional strategies that they could try together. Meeting regularly gave teachers time to discuss what worked and what needed to be done for students' continued success.

*Goal Setting.* Teachers shared that team goals promoted both dialogue not only with their own team members, but also across grade levels within the building, and sometimes with staff in other elementary buildings of the district. Time was allotted during building level meetings for discussions concerning achievement of the goals (see Table 25).

Table 25

*Goal-setting Attributes*

Positive Attributes	Challenges
- "You ask, 'How many kids would be targeted with this intervention?'"	- "When you have all of this (professional and student goals) going on, it's hard to make it all meaningful."
- "Individual and team goals will both be SMART goals."	- "The type (personal & team) goals and the number required was confusing and a challenge to meet."
- "If a goal is achieved, write a new goal."	- "We have multiple goal expectations: one team goal and two personal goals."
- "We set our goal, timeline, and assessments. It keeps you organized. We know specifically whom we are targeting."	
- "It keeps you on track."	
- You look at focus area and teach to a concentrated group of students."	

Effective strategies were shared and developed by teams and individuals. All team members took ownership of the team goal and shared in the responsibility of striving to work with their students in meeting the established goal. One of the key

concepts discussed both within their teams and with the researcher were measurable goals. Teachers were convinced the inclusion of a SMART goal into their action research plan contributed to its successful implementation.

*Data Analysis.* These teachers believed data was a key to improving student achievement. Prior to their action research days, teachers expressed collecting achievement data but not using it to enhance their students' achievement. Through their professional development program, personal readings, and discussions they now firmly believe data should drive their goals. In determining goals, they felt it often best to discuss and analyze the data as a team in order to ensure ownership and accountability (see Table 26).

The incorporation of teamwork, goal-setting, and data analysis in their teacher action research plans proved invaluable to these two teacher teams. Weekly team meetings were enhanced by the daily opportunity to dialogue regarding their progress with the team's action research plan. The results-oriented nature of the SMART goal defined for the teachers what achievement data to collect and analyze so they could adequately answer the research questions of their action research plan.

Table 26

*Data Analysis Attributes*

Positive Attributes	Challenges
- “We can assess weekly with alternate DIBELS passages and the reader’s theater rubric.”	- “I’m not done with assessments. I was in ‘tears’ yesterday trying to get it done. I know these were due last Friday.”
- “I can work with my team to develop goals and work on developing teaching strategies that will help me to accomplish the goals I have set.”	- “Did Measures of Academic Progress (MAP) questions match our curriculum?”
-The district’s assessment consultant created a one-page document that merged achievement data from DIBELS assessments to share with parents at conferences.	
-“We all track five kids in each class but <u>all</u> are doing the lessons!”	
- “One student grew from having only 24 correct at the start to 94 correct on the final test!”	

*Contextual Constraint: Time*

Teachers were taking action in their classrooms by following their results-oriented goals and accompanying action plans; however, time to conduct research on a variety of instructional strategies they might use for instructional interventions did not exist. One teacher team incorporated a research-based instructional strategy in their action research plan, yet if a more appropriate instructional intervention existed, lack of time to conduct the research to compare possible interventions led teachers to use the one strategy.

Based on the researcher's team observation records, the teachers had brief allocations of time to apply their cognitive understandings of the cycle of teacher action research. Their limited weekly team time, while more than a lot of elementary teachers have for common planning, did not allow for rich discussion of the achievement data collected from their progress monitoring activities. When asked if action research had a weakness, one teacher quickly responded, "I would say it is probably having the time, it would help to be given the time to do it, and probably the paperwork, be given time for the paperwork."

A member of the other teacher team had this to add, "It's just one more thing to do. Sometimes it's just time-consuming preparing games, activities, center things, or volunteer things to do with those targeted students. It's the time management of that and the management of whether you're doing progress monitoring."

Teacher teams had few opportunities for extended periods of time to reflect on the impact of the research-based interventions they had used and then generalize their future potential use with their students. The teachers' knowledge base was revealed in their definitions of action research. They understood that conversations and classroom decisions were an integral part of the practice of action research; however, the time to delve deeper into the stories behind their classroom research did not exist as big blocks of time.

Interview questions for the assessing category were designed to determine what the user was focused on as a result of personal use of action research. Teachers reported a focus in terms of time, management of student assessment practices, and student gains.



Appropriate instructional strategies for their results-oriented goals needed the support of an action research plan complete with time to implement with fidelity as described in the research that supported that specific strategy. With lack of time, teachers were forced to take shortcuts, to possibly discover strategies “by accident” and hope for the best.

As classroom action researchers, these teachers were checking on students’ achievement growth at scheduled points during implementation of their plans. This practice, often referred to as progress monitoring, allowed the teacher to not only determine if individual students were continually making improvement, but also to consider the impact of the instructional strategy on the learning of the child. While an exemplary attribute of action research, one teacher shared, “It’s just one more thing to do. . . . it’s just time consuming preparing games or activities or centers. . . . It’s the time management of that and the management of whether you’re doing progress monitoring.”

A few teachers moved beyond the mechanical use level in their implementation practices and readily offered to their team members synthesized information on the research they read that was specific to the needs of students in their grade level. Time to do this was during teachers’ personal time, yet these teacher researchers did not begrudge the extra time devoted to this practice.

One reported with pride, “This is the first year that I really feel we were very deliberate with what we chose as an intervention, it was research based, showing what the kids – what their assessments were at the beginning.”

The need for additional common planning time during the school day increased as these teachers recognized that to reap the full benefits of action research, blocks of time

needed dedicated to their efforts. The building administrator and district office personnel listened and responded with the interventions of support described next.

### *Support Structures*

*Specialists on Staff.* The district had a literacy integration specialist whose duties included working with the K-8 classroom teachers on their balanced literacy curriculum by modeling the use of research based instructional strategies in the classrooms while their teachers observed. She also assisted in the development of action research plans, a professional resource that benefited both the teachers and students as these plans were implemented. This form of peer coaching was a supportive intervention for the teachers as reflected in the following:

I got an e-mail from the literacy integration specialist regarding our possible use of reader's theater as a research-based intervention. She said the research shows that if the kids are not reading 40 words per minute, then you're not going to see as much growth using reader's theater.

This district also hired a K-12 technology integration specialist and a technology teacher for every school. The teachers on both grade level teams, when discussing the development and implementation of their action research plans, cited contributions made by this building level technology teacher. In particular, her help was beneficial in setting up website connections the students could access from school and home when working on their math facts goal.

*Teacher trainers.* The district used the teacher trainer model to disseminate training in research-based strategies. Based on an analysis of district-wide assessment results, a district-wide action research plan was developed that targeted improved

inferential comprehension by all students. Achievement results would be measured using the winter district-wide standardized assessment. The interventions selected for this plan were the research-based strategies that would be taught to the staff by teacher trainers. Teacher trainers were provided ongoing training in this comprehension skill by intermediate agency consultants and the district reading strategist. In turn, at the monthly professional development early dismissal sessions the teacher trainers provided identical training for their colleagues.

A teacher-trainer was on one of the teams observed and she shared this insight on her responsibilities:

I had training at district office with the research and how to help students with inferencing. I then helped the team during the January early dismissal. We have a nine-week district action research plan on inferencing. We will teach inferencing two days a week for that nine weeks before the district-wide assessment is taken.

*Administrative support.* Creating a schedule that incorporates a weekly common planning time for a team of teachers is a challenge. Having a schedule that provides daily common planning time is a dream for most elementary teachers, but in the case of this elementary school, daily common planning time was a reality. The combined effects of creative scheduling and reassigned supervision duties provided an extended time of 25 minutes of common planning time to the teachers' lunch period.

During the focused interviews, every teacher commented on the positive impact daily planning time had on their efforts as a team. One teacher said, "We eat together in somebody's room daily. It's a wonderful time to collaborate personally and

professionally. The principal values that time together and for some of us, that's the only time we can talk about student achievement, planning and instruction."

One team facilitator succinctly summarized the value of the daily time:

It's a great time to come and to share ideas and just to regroup –get some support, share some ideas before you tackle the rest of the day. It is so important to have that time at least once a day to get together. . . . You'll find people on our team keeping little post-it notes on their desks, thinking 'Oh, I want to talk about this at lunch.' We can talk face to face and come to some consensus building if we have a decision to make.

In addition to the daily common planning time, the principal secured one-half day of planning time for each teacher team during the first semester. This opportunity to meet for an extended time occurred shortly before the focused interview took place. The currency of this event allowed the teachers to share accurate information regarding the accomplishments they had made, such as in-depth review of progress made on their action research, exploration of additional instructional strategies, and the development of a framework for the next semester. As one teacher shared and all agreed, "The one-half day was wonderful! Even once a quarter would be great because we did a lot of long-term, long range planning that day."

The building principal led by her example; her daily interactions with students, parents, staff, and community members brought the school's mission statement to life. The culture of this building "provided a safe, caring environment that encouraged a strong community of lifelong learning for all. . . children and adults." One teacher

reflected, “I think because of who the principal is, it’s part of the reason we are who we are, too.”

These teachers had experienced firsthand the positive effects of frequent common planning times, and they knew their administrators were the gatekeepers in creating and maintaining that collaborative time for them to work as teams. As these teachers gained more experience in their action research efforts, they made recommendations to the administration in ways they could support as they worked to improve their teaching practices:

We’re continuing to advocate for more time to look at data after assessments are completed at the beginning of the year, to sit down within our grade levels and be able to look at the data. The administration has given us a data day at the end of the year to analyze data but considering that’s the last day of school, I don’t think that’s the most beneficial day to sit down and look at achievement data.

The administrator in this building and also administrators at the district level listened to their staff. They provided teachers additional time for implementation and they recognized even more common planning time would benefit staff and students. Specifically, this administration supported the staff in their *sustained effort* of implementation of action research by valuing *time*, both essential components of school improvement that accelerate student achievement.

*Collegial support.* Collaboration was the backbone of implementation practices. From the administration to the teacher team levels, educators worked together to bring their action research plans to fruition. When asked how the team structure assisted her in

implementation of plans, one teacher commented, “You’ve got the support. I think it makes me feel more confident when I know that I’ve got the support that I need.”

The daily common planning time allowed collaboration to flourish. A “taste” of what common planning time provided staff and students piqued an interest in considering the additional opportunities that could be offered students and staff if collaborative time was expanded. A team facilitator emphasized their need for time, “It’s important to have that time to collaborate with your colleagues. I think that is one of the number one things in education that just has to happen. You have to have time to collaborate. You must have that time.”

Calhoun’s (1994) research based advice was modeled by the building principal and replicated throughout the building by staff members. Action research was part of the culture of these educators:

To integrate action research into the culture of a school as a normal mode of operation, we must foster and continuously tend social efficacy and ensure technical support throughout the move from innovation to permanent practice. As we . . . implement action research, we build our learning community. We actualize our belief in the efficacy of schools and of ourselves as professionals. (p. 100)

Differentiated support in the form of district and building-level content specialists, a building administrator’s responsiveness to her teachers’ action research implementation needs, supportive colleagues, and a staff dedicated to the improvement of learning opportunities for all students contributed to the successful implementation of action research plans by these two teacher teams.

### *Summary*

The purpose of this study was to serve as a research-based resource for educational leaders interested in teacher action research and what they might anticipate regarding changes in teaching practices, changes in student learning, and the benefits and challenges of implementing a teacher action research program.

The first research question regarded teacher perceptions of changed teaching practices as a result of implementing classroom action research. Teachers defined their changed selves as (a) deliberate practitioners; (b) informed consumers of research-based practices; and (c) internal and external communicators of research activities.

Teachers shared that deliberateness came with time and practice. They recognized the important contributions of personal research and the incorporation of research-based instructional strategies in their action research plans to ensure their interventions aligned with their students' specific academic needs. They also stressed the value of communications as a critical component in shaping the infrastructure of future action research plans.

The second research question that guided this study asked the teachers to describe changes in their students that they perceived to be a result of classroom action research practices. Teachers believed goal-directed student learning enhanced not only the motivation of students, but also their academic learning. Informing students of their individual achievement goals and the practice of progress monitoring allowed students to track their personal progress and encouraged them to improve their skills.

The final research question sought to define the characteristics of a well-designed teacher action research plan. The resultant themes for this question included: (a) a profile

of a teacher action researcher; (b) core characteristics of an action research team; (c) constraints of implementation tasks; and (d) the importance of support structures.

Teachers profiled themselves as action researchers by sharing their planning and in-class implementation tasks. They stressed the importance of teamwork, goal-setting, and data analysis in the implementation of their action research plans, along with the need for time to accomplish the necessary tasks. Support from district and building level administrators, intermediate agencies, colleagues, and parents were integral to successful implementation.

In Chapter 5, we will explore conclusions from these themes as well as discuss the limitations of the study. Possible implications, including practical application of the findings and recommendations for future research, will be presented.



## Chapter 5

### CONCLUSIONS

The purpose of this study was to share teachers' perceptions of changed teaching practices and student learning as a result of their implementation of action research at the classroom level. In addition, this study was to contribute to the information base for making decisions about the design, implementation, and evaluation of an action research professional development program. Nine teachers from one elementary school in central Iowa were observed during a four-month period as they implemented action research practices in their classrooms. This chapter contains a presentation of findings related to the three research questions that guided this study.

The methodology of this research was an observational case study with the major data-gathering technique participant observation that was supplemented by formal and informal interviews and a review of documents. This chapter begins with the research conclusions and research discussions of the study. Next, limitations related to the study are presented, followed by recommendations for future research.

#### *Research Discussions*

The goal of the research process is to advance professional knowledge and support reliable practices within the teaching profession. Based upon this study, the researcher identifies five key findings that will be further discussed below.

The first major finding identified the significance of both internal and external communication throughout all phases of the action research cycle. These teacher researchers found the frequently overlooked use of external communications an essential

part of a successfully implemented action research plan. Concerns Based Adoption Model studies revealed communications as a *game plan component* important in change efforts (Hall & Hord, 2001).

On-site participants needed to inform individuals and groups external to the implementation site in order to gain and maintain their support. Teachers in this study included this communications intervention strategy in their action research plans and found it significant in their efforts to achieve the results-oriented goal.

The second major finding focused on student learning. The teachers in this study perceived that their students' learning was positively impacted by action research and results for the two research plans implemented did demonstrate that learning had occurred. As a group, the students' oral reading fluency increased at second grade and the math computational skills improved at third grade; however, caution is advised without statistical achievement data to support these perceptions.

The third major finding identified the supportive benefits of collaborative teamwork when implementing a teacher action research plan. In professional learning communities, teachers work together collaboratively and continually (Hall & Hord, 2001). Collaborative action research allowed teachers to have conversations about their students, learning, and teaching. As they reflected on these three topics, they posed questions regarding what was important, providing the teams with opportunities for learning from and with each other. The collaboration allowed for collective decision-making and the development of new ideas and discovery of research-based information that could be used in problem-solving.

The fourth major finding from this study identified the imperative need for common team planning time that promoted collaborative efforts and allowed teachers to successfully implement an action research professional development plan. The research of Hall and Hord (2001) found time emerging as one of the key issues that directly impacted school change, yet, time was the most typically lacking resource for change.

School reform efforts that have been proven to positively impact student achievement take time for teacher training and time to implement with fidelity. Not only do teachers need time for planning, staff development, and sharing, but facilitators of change must have time to appropriately do their work. Scheduling time for teachers and facilitators to meet together in their peer groups so they could discuss successes and problems during implementation proved invaluable in this change effort of teacher action research.

Lack of time and energy on the part of teachers is a primary implementation challenge. The teachers in this study had a guaranteed 25 minutes daily as a common time to meet and discuss progress on their action research plans and they were requesting additional extended time periods to conduct these activities. Their request was supported by the research of Purnell and Hill (1992) that suggested successful implementation of a practice like action research depends on scheduling time with appropriate lengths, frequency, and availability to the participants.

The fifth major finding emphasized the importance of support structures within the district, in particular the school, as critical components of a successfully implemented action research plan. Leaders of a change effort need to consider scheduling training and development sessions across time as the implementers move from the novice level toward

the expert level of users of teacher action research. Leaders contribute to the development of positive attitudes about use of action research by communicating with staff, holding workshops, clarifying misconceptions about the practice, and modeling use of action research in the context of his or her own work.

That context can support or inhibit change. Boyd (1992) defined two components of context. The first was the physical element, the building facilities, schedules and policies. The second component was the people element, the beliefs and values held by the members of the group and the norms that guided their behavior and relationships. The principal of this school nurtured positive relationships among all staff, students and parent/community members. This supportive context increased effectiveness so that students benefited from the action research efforts of their teachers.

### *Research Conclusions*

Traditionally, research is categorized into two broad types: basic and applied. Those who practice applied research seek findings that can be used directly to make practical decisions about, or improvements in, programs and practices to bring about change with more immediacy (Bogdan & Biklen, 2003). Teacher action research is categorized as applied.

The findings from this qualitative research study attempt to report findings that are explicitly related to the practice of teacher action research. Five conclusions will be presented in conjunction with the discussions this study generated. This information may be used to support a greater understanding of teacher action research and the potential impact it has on teaching practices and students' learning. In addition, those facilitating the design, implementation, and evaluation of a teacher action research professional

development program may find the experiences and advice of these teacher researchers beneficial as they plan a similar action research program.

The first research question addressed teachers' perceptions of changed teaching practices as a result of their participation in teacher action research. Teachers described themselves deliberate practitioners, informed consumers of educational research, and communicators. The structure of implementation within the building was set by the building principal and was designed to ensure the teachers not only had a daily common time to meet, but also that the facilitators of each team would meet once or twice a month to review the status of their action research plans.

This supported the research of Oja and Pine (1989) who found teacher action researchers collected information from the thinking of other teachers to define and address problems. As a result of action research and frequently scheduled opportunities to communicate internally, these teachers saw themselves as professionals whose opinions were valued and respected.

As deliberate practitioners, these teachers were observing their students learning practices and achievement gains with specific criteria to observe and a fine-tuned foci on students' learning. In addition, they were informed consumers of their professional development needs. Through their research activities, teachers were able to define their personal training needs. This supported findings of Kyle and Hovda (1987) and Oberg and McCutcheon (1987).

The two teacher teams observed had control over the design, implementation, and evaluation of their team action research plans. Data collected indicated teachers believed that the incorporation of external communications as an intervention in their action

research plans was a changed practice that contributed positively to the successful implementation of their plans. The change was so powerful both teams recommended external communications be included as an intervention in proceeding action research plans. In particular, communications with parents provided the opportunity to extend the plan into the home, encouraging partnerships among the significant people in the students' lives.

Such findings were consistent with Cardelle-Elawar (1993) who found avenues of communication were opened between teachers from different grade levels, disciplines, and schools as a result of internal and external communications regarding action research practices. Often a new pattern of communication and sharing was created as a result of action research.

The second research question addressed changes in students' learning and two themes emerged: goal-directed learning and improved student learning. Continuous improvement in student learning was firmly embedded in all action research plans. Specifically, these teachers were required to include a SMART goal that ensured results of the plan could be measured.

Professional development was provided to ensure all teachers not only understood and could use the action research cycle, but they also could apply the components of a SMART goal to answer their research questions. Collecting data drew teachers' attention to the student's learning as a central focus (Andrews & Lewis, 2002). The use of data to not only write a research question, but to also design, implement, and evaluate the effectiveness of the action research plan showed the value teachers placed on the collected data and the learning of their students.

Shared understanding developed through professional learning impacted teacher action practices in the classroom. As some students' learning improved, the teachers shared an increased need for differentiated instructional strategies to ensure the needs of all students were addressed appropriately. Students were showing improvement in the two skills areas researched. Just as McDiarmid et al. (1997) predicted, when achievement scores plateaued, teachers looked for additional innovative ways to enhance their teaching skills in order to improve their students' achievement results.

The students of both teacher teams demonstrated increased achievement in their targeted goal areas. Narrowing the focus to specific skill deficits prompted teachers to reflect on the current learning of their students in order to create an action research plan that impacted the learning of students and teachers alike. As teachers investigated research-based teaching practices that held promise for instructional interventions they added to their personal collection of effective teaching strategies. As reflective professionals, the teachers in this study confirmed the findings of Auger and Wideman (2000) that teachers use action research methods to investigate questions about their practice and to develop workable solutions that improve learning by all.

Just as Schmoker (1999) found "goals and the commitment that they generate are the glue that holds teams together," teachers perceived that their students were experiencing improved student achievement as a result of their goal-directed learning. A student's personal learning goal held him accountable, and inspired most to even greater aspirations. Schmoker (1999) found the combination of goals and teamwork essential to performance. These teachers found their teamwork with each student a positive contribution to the students' goal-setting and achievement gains.

The third research question addressed the implementation characteristics of an action research plan. Four themes emerged from data collected: (a) perception of self as an action researcher; (b) the core practices of teamwork, data use, and measurable goals; (c) contextual constraints; and (d) support structures.

Data collected for the theme of core practices revealed an emphasis on the first practice, teamwork. Teachers perceived that working together allowed them to perform better than when they worked in isolation. Schmoker (1999) reinforced this perception with his research findings on teamwork, "People accomplish more together than in isolation; regular, collective dialogue about an agreed-upon focus sustains commitment and feeds purpose; effort thrives on concrete evidence of progress; and teachers learn best from other teachers."

These teachers looked forward to the daily common time to dialogue with one another. They made notes throughout the morning that would be shared with their colleagues over the extended lunch period. When studying collaborative action research teams, Cardelle-Elewar (1993) found isolation and passivism were replaced with an environment of collaboration and professional growth. The teachers in this study confirmed those findings.

The teachers shared both the positive and challenging attributes of the core implementation practices. Their positive comments fully endorsed the use of teamwork when implementing action research in the classroom setting. These findings were not surprising based on the extensive research of Schmoker (1999) that was supported by research and articles devoted to identifying the concept of collaboration. Action research contributed to teacher collegiality and a greater willingness to communicate concerns and



encouraged experimentation with problem solving. In addition, collaborative learning communities generate more learning than is possible for isolated individuals who are not part of a team (Martin-Kniep, 2004; Sagor, 2000).

The third research question also addressed contextual constraints. Data collected indicated the resource of time the most influential contextual constraint for these teachers. Research by Purnell and Hill (1992) also identified that time demands associated with reform in a school are substantial. They shared lack of time and energy on the part of teachers as primary implementation challenges.

Use of research-based reform practices has the potential of improving student achievement if constraints are considered in the planning process. Purnell and Hill (1992) suggest the incremental nature of change requires a realistic time frame for how quickly the reform innovation will become part of the school's culture and the teachers' repertoire of skills. These teachers were in their second full year of practicing action research skills and had made exemplary gains in their levels of use. Time continued to be an issue as teachers wanted to do more and felt they could provide better for their students if given extended time periods to focus on their needs.

Lastly, the third research question addressed the importance of support structures throughout the implementation of an action research plan. Data on the core practice of collaboration revealed the importance of the support offered through the structure of a team. Research of Auger and Wideman (1999) and Kyle and Hovda (1987) found collegial support encourages continued shared investigations of common concern and offer optimum involvement of teachers as action researchers, making it possible for participants to learn more about themselves as teachers.

Kyle and Hovda (1987) also found school leaders should provide support for teachers engaged in such activities. The building administrator of these two teacher teams was cited numerous times as a critical support in their endeavors. As a result of the principal's close proximity to staff throughout the implementation of their action research plans, these teacher researchers had an improved understanding of the relationship among scheduling, curriculum, and school philosophy based on the type of support provided by the building administrator.

The principal ensured the teacher teams had daily time to meet beyond the weekly time designated by district leaders. This practice of creative scheduling reinforced the finding of Oja and Pine (1987) that the assignment of the time and place for teachers to collaborate reflects the school's commitment to the reform.

#### *Future Research Recommendations*

In order to support a credible knowledge base related to teacher action research, there exist multiple opportunities for future research. The results from this study suggested four recommendations for future research.

First, the present study should be replicated with a sampling of middle and high school teachers used to determine the Levels of Use. In the researcher's review of current bibliographic information available from the UMI Dissertation Abstracts database, only two middle school studies focused on teacher action research were found and no studies were located on the high school teachers' experiences with action research. Currently, scientifically research-based instructional strategies for use at the middle and high school levels are predominant in professional literature. The time is ripe

for teacher action research at the secondary level to add to contribute to theory and classroom research.

Second, a study should be conducted to identify the indicators of context that are conducive to change, for example, does reducing isolation, increasing staff capacity, providing a caring, productive environment, or promoting increased quality, positively affect the implementation of a new innovation? Research is needed on whether and how school context influences teacher efficacy.

A third recommendation would be an investigation to measure the direct impact that a teacher action research professional development program has on student achievement. A study that goes beyond the perceptual level to statistical information could contribute positively to the value placed on action research professional development efforts by teachers and school districts.

A fourth area of possible future research involves the third component of the Concerns Based Adoption Model, the Innovation Configuration Map (IC Map). This study focused predominantly on the levels of use of the innovation and also observational data. The use of the IC Map for planning training and development would provide a clear and direct way to record the actual extent and quality of what is being implemented, allowing the researcher to make judgments about the effects of an innovation.

Finally, it is recommended that future investigations should consider a four-year minimum longitudinal study of a group of teachers as they begin professional development training in a collaborative action research program and implement this practice in their classrooms. The length of the study would allow the researcher to use all three components of the Concerns-Based Adoption Model (CBAM) to assess concerns

profiles, levels of use, and implementation configurations to determine the types of interventions that support teachers in their action research efforts.

### *Summary*

Data were gathered from the following sources: (a) Measuring Levels of Use of the Innovation, that was given to nine teachers of either second or third grade in one elementary school to determine teachers' Level of Use and to aggregate data of anecdotal comments; (b) descriptive analysis of the study group logs from each of the two elementary grade level teams; and (c) descriptive analysis of the teacher's use of action research components using an innovation configuration map.

In a learning organization all staff members contribute ideas for change and everyone contributes to the interventions needed for the implementation of an innovation like teacher action research. The participants in this study demonstrated the research-based dimensions of a professional learning community:

1. Shared mission, vision, and values. The nine teacher participants shared a collective commitment to the school's mission, "Touching hearts. . . expanding minds!"
2. Collective inquiry. Using collective inquiry these teachers questioned current teaching practices, the impact these practices had on their students' learning, and developed questions they could answer using classroom action research.
3. Collaborative teams. People engaged in collaborative efforts rather than individual tasks learn from one another and that interaction contributes to a mode of continuous improvement. The opportunity for these teachers to have a daily

common time to dialogue improved the organizational growth of teacher teams in this school.

4. Action orientation and experimentation. Members of a professional learning community turn visions into reality. These teachers wrote results-oriented academic goals that provided an end-target for their action research plans. They learned from each cycle of action research, applying significant learnings to their next action research plan.
5. Continuous improvement. While focused on the implementation of the current action research plan, several teachers in this study were looking ahead to the next cycle of research, they were making mental notes based on data collected of teaching practices to continue and those that needed revised to best meet their students' needs.
6. Results orientation. Both teacher teams designed action research plans with results-oriented goals that provided a common focus for all participants and a framework for assessing their action research efforts. Not only were the academic efforts of the students reviewed, but results also reflected the collaborative efforts of these teachers.

As a professional development program, teacher action research provides a framework for addressing the expectations outlined in the Iowa Professional Development Model (IPDM). Teachers involved in action research focus on their curriculum, instruction and assessment practices. Through their collaborative work, teachers are engaged in decision-making and planning that is aligned with the identified needs of their students. Supportive leadership must be provided throughout the system

from the team leader closest to the action being implemented to the building and district administrators who provide the resources of time, money, and recognition of efforts.

Training all staff in the practice of action research provides a common district-wide approach to apply to building-level improvement plans. To accomplish student achievement gains, focusing on new content is the priority, however, issues of context and process may need addressed simultaneously. Schools that attempt significant reform need to “begin with the end in mind.”

It was the intent of this study to provide information that supported grounded theory in a professional development program focused on teacher action research. The goal was to not only assist district leaders in understanding the impact action research has on teaching practices and students’ learning, but also to provide guidance for those leaders in their implementation of a teacher action research professional development program at the elementary level.

In this era of accountability for improved student achievement, the action research approach is a proven beneficial method for educators to apply from multiple levels: the district, the building, and the classroom. The participants in this study provided invaluable insights into the design, implementation, and evaluation of an action research professional development program.

As people work toward a collective vision that clarifies the nature of problems that have brought them together, they gain a greater understanding of the complexities of the situation in which they are enmeshed. They also gain a more holistic understanding of the multitude of factors within which problems are embedded and realize the need to formulate increasingly sophisticated plans to resolve them.

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## Appendix

## Appendix A

## Measuring Levels of Use of the Innovation Interview Questions

24

Figure 4: Interview Questions

Question	Purpose
Are you using the innovation?	To distinguish between users and nonusers; to break LoU 0-II from LoU III-VI.
IF YES	
What do you see as the strengths and weaknesses of the innovation in your situation? Have you made any attempt to do anything about the weaknesses?	To probe Assessing and Knowledge categories.
Are you currently looking for any information about the innovation? What kind? For what purpose?	To probe Acquiring Information category.
Do you ever talk with others about the innovation? What do you tell them?	To probe Sharing category.
What do you see as being the effects of the innovation? In what way have you determined this? Are you doing any evaluating, either formally or informally, of your use of the innovation? Have you received any feedback from students? What you have done with the information you get?	To probe Assessing category.
Have you made any changes recently in how you use the innovation? What? Why? How recently? Are you considering making any changes?	To distinguish between LoU III (user-oriented changes), LoU IV B (student-oriented changes) and LoU IV A (no or routine changes); to probe Status Reporting and Performing categories.
As you look ahead to later this year, what plans do you have in relation to your use of the innovation?	To probe Planning and Status Reporting categories.

Figure 4 (continued)

Question	Purpose
<p>Are you working with others (outside of anyone you may have worked with from the beginning) in your use of the innovation? Have you made any changes in your use of the innovation based on this coordination?</p> <p>Are you considering or planning to make major modifications or to replace the innovation at this time?</p>	<p>To separate LoU V from III, IV A and IV B. If a positive response is given, LoU V probes (below) are used.</p> <p>To separate LoU VI from III, IV A, IV B and V.</p>
<div data-bbox="618 800 841 884" data-label="Section-Header"> <p>LoU V Probes</p> </div> <p>How do you work together? How frequently?</p> <p>What do you see as the strengths and the weaknesses of this collaboration?</p> <p>Are you looking for any particular kind of information in relation to this collaboration?</p> <p>When you talk to others about your collaboration, what do you share with them?</p> <p>Have you done any formal or informal evaluation of how your collaboration is working?</p> <p>What plans do you have for this collaborative effort in the future?</p>	

Figure 4 (continued)

Question	Purpose
<div data-bbox="683 506 808 590" style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: fit-content;">IF NO</div> <p data-bbox="240 615 706 695">Have you made a decision to use the innovation in the future? If so, when?</p> <p data-bbox="240 751 675 804">Can you describe the innovation for me as you see it?</p> <p data-bbox="240 835 703 915">Are you currently looking for any information about the innovation? What kinds? For what purposes?</p> <p data-bbox="240 947 686 1026">What do you see as the strengths and weaknesses of the innovation for your situation?</p> <p data-bbox="240 1058 703 1167">At this point in time, what kinds of questions are you asking about the innovation? Give examples if possible.</p> <p data-bbox="240 1199 698 1278">Do you ever talk with others and share information about the innovation? What do you share?</p> <p data-bbox="240 1310 711 1440">What are you planning with respect to the innovation? Can you tell me about any preparation or plans you have been making for the use of the innovation?</p> <p data-bbox="240 1472 711 1551">Can you summarize for me where you see yourself right now in relation to the use of the innovation?</p>	
	<p data-bbox="771 615 1252 724">To separate LoU 0 from I; to probe Status Reporting, Planning and Performing categories. To separate LoU I from II.</p> <p data-bbox="771 751 1149 779">To probe Knowledge category.</p> <p data-bbox="771 835 1179 888">To probe Acquiring Information category.</p> <p data-bbox="771 947 1149 974">To probe Assessing category.</p> <p data-bbox="771 1058 1190 1110">To probe Assessing, Sharing and Status Reporting categories.</p> <p data-bbox="771 1199 1117 1226">To probe Sharing category.</p> <p data-bbox="771 1310 1130 1337">To probe Planning category.</p> <p data-bbox="771 1472 1203 1551">To get a concise picture of the user's perception of his/her use or nonuse.</p>



Figure 4 (continued)

Question	Purpose
<div data-bbox="641 436 836 520">Past Users</div> <p data-bbox="245 548 716 600">Why did you stop using the innovation?</p> <p data-bbox="245 630 699 762">Can you describe for me how you organized your use of the innovation, what problems you found, what its effects appeared to be on students?</p> <p data-bbox="245 791 699 898">When you assess the innovation at this point in time, what do you see as the strengths and weaknesses for you?</p>	

## Appendix B

### Levels of Use Chart

[illegible][illegible]

Received No. 118-74-0317

## Appendix C

### Participants' Levels of Use

<b>Grade</b>	<b>Knowledge</b>	<b>Acquiring Information</b>	<b>Sharing</b>	<b>Assessing</b>	<b>Planning</b>	<b>Status Reporting</b>	<b>Performing</b>	<b>Overall LoU</b>
2	Mechanical	Refinement	Integration	Mechanical	Mechanical	Routine	Mechanical	Mechanical
2	Mechanical	Refinement	Refinement	Refinement	Mechanical	Routine	Refinement	Refinement
2	Mechanical	Routine	Routine	Mechanical	Mechanical	Routine	Mechanical	Mechanical
2	Mechanical	Routine	Routine	Routine	Mechanical	Mechanical	Mechanical	Mechanical
3	Mechanical	Refinement	Routine	Mechanical	Mechanical	Routine	Refinement	Mechanical
3	Mechanical	Routine	Routine	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical
3	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical
3	Mechanical	Routine	Routine	Mechanical	Mechanical	Routine	Mechanical	Mechanical
3	Mechanical	Routine	Routine	Mechanical	Mechanical	Routine	Routine	Routine

*Note:* These category ratings were assigned by the certified Levels of Use rater.

## Appendix D

## Letter of Request for Measurement Instrument

Laura L. Sivadge  
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October 20, 2003

Southwest Educational Development Laboratory (SEDL)  
211 E. Seventh Street  
Austin, TX 78701

To Whom It May Concern:

I am a doctoral student at Drake University in Des Moines, Iowa and am seeking permission to include the measurement, *Measuring Levels of Use of the Innovation (LoU)*, in my research studies and dissertation.

Knowing appropriate use of this measurement requires training. Dr. Linda Munger, of Munger Educational Resources, has agreed to serve as my mentor for the measurement component of my dissertation. With your permission, Dr. Munger has offered to train me in the administration and interpretation of the *LoU* measurement and also provide reliability to my research findings, as she will review my analyses.

If you need clarification of this request you can contact me at a phone number or email address written in the letterhead. Thank you for considering my request.

Sincerely,

Laura L. Sivadge

## Appendix E

## Permission to Use LoU Instrument



211 East Seventh Street Austin, Texas 78701 Voice: 512/476-6861 Fax: 512/476-2286

TO: Laura Sivadge (Licensee)  
Drake University

FROM: Joyce S. Pollard, Ed.D.  
Director, Office of Institutional Communications

SUBJECT: Permission to reprint and distribute SEDL materials

DATE: November 23, 2003

Thank you for your interest in using the printed measurement *Measuring Levels of Use of the Innovation (LoU)* (the "work"), a measurement by the Southwest Educational Development Laboratory (SEDL).

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6. This license and permission to reproduce the work is limited to the terms hereof and is personal to the person and entity to whom it has been granted; and it may not be assigned, given or transferred to any other person or entity.

Please sign below, indicating that you understand and agree to comply with the above terms, conditions and limitations, and send the original back to us. If you wish, you may keep a duplicate of this agreement, but the copy with your original signature needs to be returned to us. Thank you again for your interest in SEDL's materials. If you have questions, please contact me at (800) 476-6861.

Sincerely,

*Laura L. Swadye*  
For Southwest Educational Laboratory

Agreed and accepted:

Signature: *Laura L. Swadye* Printed Name: Laura L. Swadye

Date signed: November 23, 2003

## Appendix F

Institutional Review Board Approval  
(Drake University)

Page 1 of 1

Subj: **Re: IRB proposal**  
Date: 2/27/2004 8:42:04 AM Central Standard Time  
From: Jennifer.McCrickerd@DRAKE.EDU  
To: Sivadgel@aol.com

Laura,

Your proposal has been approved.

Jennifer McCrickerd

--

\*\*\*\*\*

Chair, Philosophy and Religion Department & Chair, Institutional Review Board  
Drake University  
Des Moines, IA 50311  
(515) 271-2250

\*\*\*\*\*

## Appendix G

### Participant Consent Form

Dear Participant:

Thank you for agreeing to consider your participation in this qualitative research study on action research and its impact on teaching practices and student learning. Change in education is inevitable, but how do educators address these changes so they positively impact teaching practices while keeping student achievement as the central focus? The ideas you contribute throughout this study will prove beneficial not only for you and your school's continued action research work, but for other schools that incorporate action research into their professional development programs.

The purposes of this study are two-fold. First, this study will provide a reliable source of information regarding the needs of the classroom teacher when practicing action research in the classroom setting. Second, this study will contribute to the information base for making decisions about the design, implementation, and evaluation of an action research professional development program.

As a participant in this multi-case study, you will have a personal interview with the researcher in August 2004 and again in December 2004. The *Measuring Levels of Use* questionnaire will be used for this focused interview. For group observations, the researcher will use an Innovation Configuration Map to record observations made during teacher team meetings and professional development sessions. Lastly, teacher artifacts of action research plans will be collected. The information gained from these three data sources will be used in the written report of the study.

The following are terms of participation:

- The information obtained during this research will be used to write a multi-case study dissertation that will be available for circulation from Cowles Library at Drake University.
- Real names will not be used in the data collection or in the writing of this dissertation.
- The participant has the right to withdraw at any time during this study, for any reason, and the data will be returned upon request.
- There are no anticipated risks or discomforts to the participant; however, time is a valuable resource the participant will contribute during the focused interview process. Compensation for sharing personal time will be in the form of a gift card.



- Xxxx, School District liaison for this research study, will receive a final copy of the report soon after its completion. At xxx School District's discretion, the researcher will meet with the participants and other interested people to discuss the findings of the study.

Participation is voluntary. Refusal to participate involves no penalty. You may discontinue participation at any time without loss of benefits to which you are entitled. If you agree to participate in this multi-case study project, according to the terms above, please sign. A copy of the signed consent form will be mailed to you.

Researcher: Laura Sivadge

Participant: \_\_\_\_\_ Date: \_\_\_\_\_

Please consider the following permission request:

I (give/do not give) my permission to be directly quoted in this multi-case study report.

Participant: \_\_\_\_\_ Date: \_\_\_\_\_

Approval date of the Consent Form by the Drake University Institutional Review Board:  
2/27/04

## Appendix H

### Innovation Configuration Map for Teacher Action Research

Teacher Action Research Innovation Configuration Map				
(a)	(b)	(c)	(d)	(e)
Question				
The research question focuses on teaching & learning practices that could have an impact on students' behavior or achievement. The question includes the actions and provides guidance for data collection and analysis.	The research question involves problem posing and conveys the focus of the research and data to collect and analyze.	The research question Is manageable and do-able within the time constraints of the researcher(s).	The research question has no focus and provides the researcher(s) no direction.	The research question Is too narrow or too broad to guide research.
Information				
Team members research their own work. The problem studied is focused on classroom needs. Revision of practice is based on new knowledge about teaching and learning.	Team members collect information from the thinking of other teachers to define and address problems.	Team members demonstrate ease in conducting research.	Team members view research as a static activity with no connection made between the research conducted and classroom activities.	Team members respect the opinions of those outside the classroom versus seeing themselves as professionals.
Collection				
Teachers practice data collection techniques that are detailed, realistic, manageable, and are aligned with actions taken and the results of those actions.	Teachers practice data collection techniques that are detailed and manageable, but are not aligned with the actions taken and the results of those actions.	Teachers practice data collection techniques that have some detail and are manageable in terms of types and numbers.	Teachers practice data collection techniques that include no specific detail about what kind of data will be collected, when it will be collected, or for what purpose.	Teachers practice data collection techniques that lack mention of specific methods for gathering data.

Teacher Action Research Innovation Configuration Map				
(a)	(b)	(c)	(d)	(e)
Decisions				
Team decisions are reflective and show evidence that team members give considerable thought to their actions and those of their students.	Team decisions are data-driven and lead the researcher to some new ways of looking at or understanding the actions studied.	Team decisions are clearly supported by the data.	Team decisions are not supported by the data collected.	Decisions are made by the administration.
Collaboration				
The teacher team is a collaborative group. Teachers observe each other teach. There is a mutual development of instructional plans and materials.	The teacher team uses collaborative action research to problem solve and as a process for refining and using teacher capabilities.	The teacher team uses the action research process to problem solves.	The teacher team displays a minimal amount of support to team members in understanding educational problems and expressing possible solutions.	The “team” functions as an individual and is passive. There is no team effort or the sharing of a common body of knowledge.
Goal Writing				
The team writes a goal that is specific/strategic, measurable, attainable, results-oriented and time-bound.				

Source for ideas: Martin-Kniep, G. (2004). Developing learning communities through teacher expertise. Thousand Oaks, CA: Corwin Press.